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MAN IN HUMAN GEOGRAPHY

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Humanity as a whole has not been destroyed since the days of Noah, although some fiction writers have indulged in this sad kind of fancy, and although great catastrophes, caused by nature or by man, have indeed happened. The destruction of Pompeii or of Saint-Pierre de la Martinique, and the atom bomb on Hiroshima, killed instantly thousands of human beings, and there were maybe millions drowned in the flood of the Hwang Ho in 1853. But none of these calamities has notably changed the balance of the world as a whole—not even the last world wars, for which a toll of twenty-five millions is a very conservative estimate.

Nevertheless, speaking for this instant only in terms of weight and bulk, mankind is indeed a very small part of the world. Consider this little computation : The weight of the average man is such, taking children into account, that a ton of human flesh will correspond to about seventeen persons. The density of the human body is the same as the density of fresh water. The whole of mankind numbers about 2500 millions, and so is of the same volume and weighs as much as 150 million tons of fresh water. Now, let us dramatically suppose that all the population of the world be drowned in the Lake of Geneva, a relatively small body of fresh water. Not only is this operation theoretically possible, but as a matter of fact the lake would be disturbed so little that a supposed Noah would hardly be aware of any change. The level of the lake would rise a little over ten inches, say twenty-six centimetres, which is five or six times less than the usual changes of the lake level due to natural causes or to industrial requirements. On an average, the total volume of mankind, if we think of water, would be carried away from the lake by the Rhône in less than six days. Let us try another comparison, this time thinking of weight only. Mankind eats its own weight of wheat in one year, burns its own weight of coal in five weeks. It corresponds to the weight of two hours' rain on the Scottish Lowlands, evaporated in ten minutes.

But, if this is so, what about the swarming densities of population

in some parts of the earth? Well, as a matter of fact, they swarm only in the slums of some big cities, and here comes the atom bomb. As for the open country, three thousand people per square mile is overcrowding, and that means about five persons on an acre. In no part of the world can human flesh represent an appreciable tonnage of matter among the realities of nature or even among man's own works. Very small and light and wind-blown dust indeed. Such is this product of the most recent and shortest age of the earth's history. A sudden melting of the polar ice caps, an ensuing uplift of the level of the oceans would replunge most of humanity into nothingness, and at present it does its best to ape these catastrophes.

However, this little bulk of human flesh and the brains it is proud to wear are the chief part of geographical knowledge, indeed, the chief part of all knowledge. When Protagoras says, as M. André Siegfried likes to remind us, that " man is the measure of things," we can only understand that man is chiefly concerned by things on the human scale. But that is saying the truth, and that is saying much. Says another—Jean Bodin, the true founder of human geography back in the sixteenth century—" there is no wealth but men." Says a third—Adolphe Thiers, the first President of the French Republic, who as an historian as well as an expert in politics knew human questions well—" there are only men, and passions of men." Do these passions, do the feelings of men, play a part in human geography? And, if so, what part? At all times, and at no better time than the present, this is the most ominous topic for human geography.

Many geographers have believed, and some still believe, that man is only a secretion of Nature, and in his physical life a mere slave to his environment. Well, there are, or recently were, some natural civilisations where the slavery is obvious. The parts of the earth that most resemble the earthly paradise, those islands of the Pacific Ocean where Robert Louis Stevenson told his tales and enjoys his last sleep, could offer man no better meat than the two-legged ' long pig '—man himself. We are told of a ' civilisation of honey,' in some remote parts of the Amazonian basin where men live stark naked and in perpetual fears. But nowadays such purely natural ' civilisations ' are curiosities and mostly things of the past.

As soon as man works and thinks, the landscape bears his mark, and sometimes a very complicated one. Any landscape of men is a landscape of work and, therefore, an artificial one. Western Europe and many parts of the new countries live on an agricultural complex, born from many origins—very complex, very subtle, and almost unbreakable. This wheat complex, if we can so name it, is basically made of cereals, maybe from the southern steppes of Eurasia ; of potatoes from America ; of cattle, maybe from the northern steppes ; sheep and goats and fruit from the Mediterranean or Asia ; pigs and poultry from God knows where. Not a plant, not an animal in this complex, can be steadily traced back to a natural ancestor. All rural activity that manages it is moulded into traditional patterns, differing somewhat from each other according to countries, and this remains as the imprint of various tribes and former civilisations ever since the

neolithic migrations which began the formation of the complex. Such human remnants of such human alluvial confluences of various civilisations may be noticed in the rice complexes of the Far East, or even in the cotton-maize complex of more recent times, in which America, India, Egypt, and tropical Africa have co-operated.

Of course, it is easy and almost true to say that the wheat complex could not have been evolved where the rice complex has been developed, at least not as a paying proposition, and that a given complex of crops is tied to a corresponding complex of races and societies. But do not say too abruptly : wheat and sparse white men, rice and crowded yellow men, millet and very sparse black men. Many white people are overcrowded, many yellow men feed on wheat or barley or millet, some black people on rice, and some on the same fare as the white man. Nowadays, wheat as well as rice and Indian corn are grown on former virgin forests, on former deserts, on former swamps. Nowadays, men in the cold countries of the wheat complex drink tea, coffee and cocoa, eat rice, pineapples and bananas. It may be that some bodily changes have occurred in the Japanese people since barley, wheat and meat took some part in their diet. But, if so, these changes are not very much more than the undiscernible ones effected by climate and food on the African people engulfed in American civilisation for the last two centuries.

The sundry complexes of work and food are somewhat partitioned nowadays by the processes of commercial specialisation, even if American agriculture aims now at diversifying its crops again as did New England in the olden days. But the commercial trend is not back to Nature. Nothing is farther from Nature than a solid mass of spring wheat in Manitoba, extensive cotton fields in Texas, the industry-like growing of sugar-beet in Northern France or in Belgium, growing of corn and feeding cattle and hogs in Iowa, large monotonous orchards in California—than, in fact, all the work of the farmer in the new countries as well as in some of the old ones. Sometimes Nature does not seem to have provided for it. Not so many years ago it was a matter of teaching in Germany that wheat could not be grown on the South American pampa. And who could have believed that some of the best cattle can be raised in hot tropical countries like Queensland ?

We will not dwell on industry and transport, the work of which is indeed very far away from Nature, and more and more so nowadays, with such stuffs as chemical plastics, from rayon to plexiglass (like glass itself, by the way, born quite a long time ago). A railway network, a continental highway, a plane crossing the Atlantic in a day or looping round the world in 71 hours are devised, built, and kept up by man's ingenuity only, and can be destroyed mainly by man's folly.

But agriculture itself, although bound to soil and climate, could not have evolved without a strong control of Nature by man. Selection and breeding, acclimatisation and curing, devising of machinery and harnessing of water, all this is the work of man. Almost everywhere it implies a dense stratification of human traditions, involving a thousand types of crop rotation and the necessary use of all kinds of fertilisers. Starting with the empirical bush-burning and cattle dung,

man learned later to use phosphates from present-time guano, superphosphates from the chemical processing of ancient fossil guano, nitrates from the Chilean deserts and now from thin air. Ancient agriculture took nitrogen from the grass through the medium of meagre cows to feed sparse communities with meagre and monotonous crops. Modern agriculture supplies it by the use of electricity in order to grow bigger and more varied crops to feed more men, and to grow more fodder to feed more cattle and still more men on beef and mutton and pork. As many men as nitrogen, we could almost say ; at least, a cycle of feeding stuff and organic matter running on a closed circuit, and always controlled by man's skill. Machinery has increased the toll on the largest reserve of food, that in the sea. Machinery has improved and vastly enlarged the available clothing stuffs. For the last two centuries the brains and toil of men have caused an increase more than tenfold in bulk, more than a hundred times in diversity, of the useful products of Nature.

Such an increase has paralleled an increase in the number of men. The Egyptian fellah, from whom America took cotton and to whom she gave corn, to-day knows how to use chemical fertilisers, and numbers sixteen millions as against two and a half millions in the days of Napoleon. Java, for similar reasons, increased by the same ratio in the same period. The whole of mankind has more than doubled since Elizabethan times. The black race increased 35 per cent., the yellow race 335 per cent., and the white race, when it shouldered its now vanishing burden, raised its numerical strength by more than 600 per cent., becoming almost two-fifths of the whole of humanity.

A French scientist, Professor Louis Léger of the University of Grenoble, whose line of research is fresh-water fish, introduced recently the " principle of biogenic capacity." You cannot fish more trout than there are organic particles in or above the water to feed them. You cannot hope to stock a brook or a lake with trout unless you ascertain or provide for them beforehand the necessary food, and in its exact proportions. This applies to every kind of life, and especially to the number of human beings. Any country, in any stage of civilisation, has a capacity for a definite number of people, according to their own techniques of food raising, trade and transport, and to their own standard of living. Various policies can raise the number above capacity, but only by bettering the techniques or by lowering the standards.

There is no need to enlarge upon examples, as everyone knows some of them since the first world war. Let us only note that in any human society as a whole, wealth or poverty are not criteria for assessing standard of living, provided it is not lowered. Any man can be physically happy in his own traditional standard of living: the Chinese with his bowl of rice as well as the Dane—before the last war—with his milk, butter, cream, white bread and daily steak. Relative wealth is only a matter of margin between actual population and biogenic capacity. A large margin means prosperity with hopes of raising the standard, a narrow margin means danger with the hope only of holding on, an overstepping means misery. The best statement for this

marginal proposition was given to David Copperfield by Mr. Micawber: Earn a pound and spend 19 shillings, you're rich ; spend 21, you're poor. But let us add that if your earnings drop to eighteen shillings, you are impoverished too. So it is not the standard of living as such that means riches or poverty, but only its increase, its maintenance, or its fall.

Every step in human factual progress in times of peace has tended to remove the old obsession of hunger. But it has raised population at the same time as it has heightened biogenic capacity. The number of Japanese in the old days was as strictly controlled by the average rice crop as that of bees in a beehive by the available honey. In later times, the government and the big Zaibatsu concerns, using industrial processes, Oceanian phosphates and Chinese coolies, have fed their much increasing people by managing Korean rice, Manchurian soya bean and Formosan sugar, like a military commissariat does for supplying an army. The present method of feeding Great Britain is somewhat alike to that process.

But what is more, and what Malthus could not have foreseen, is that the biogenic capacity for men has, in the entire world, increased much faster than the number of men. Thus it came about that in many countries the standard of living was raised as well as the population. That is mostly true for the white race as a whole. Compare life in Britain before the two world wars to that of Samuel Pepys. If hunger to-day knocks again at our door, man can no longer blame Nature or his physical environment. He can blame only himself. So once more it is he who determines human geography.

This leads us to perceive that man, less and less a slave to Mother Nature, becomes more and more a slave to his own numbers, as well as to his own passions. Let us now consider another aspect of these points, which are closely interlocked.

As SCIENCE learns to deal with large numbers, it perceives that chance seems to disappear. Large numbers yield to the provision of facts, with a margin of error that is smaller as the numbers become larger. So the physicists know that the motions of molecules in a gas, although entirely anarchical individually, in large numbers obey very precise rules, and can be measured and foreseen. Now this statistical method is good for human societies as well, since statistics is supposed to be the science of the state. Man too is amenable to the law of large numbers within acceptable limits, and with an approximation that can be figured out. It is a matter of general knowledge that all insurance computations, all forecasts for providing the necessities of life in modern states, are based on such calculations. But if we know almost exactly how many weddings will take place in Great Britain next year, nobody can predict whether this young man or that girl will marry, and even less whether they will marry each other. Man as an individual is as unpredictable as is the molecule as an individual. Human freedom leads to something very akin to the Brownian movements of physics.

The world of men has never been an unpredictable mass of independent beings, " full of sound and fury." Neither is it, as some

have long believed, a rigid pattern of compulsory sequences with humble bows to the commands of Nature. It is a system of probable frequencies that can be figured out with sufficient accuracy as to permit forecasting, at least in the mass, for this entity that we can call " homo statisticus," the entwined counterpart of " homo economicus." This is the only way to reconcile upon earth the free will of man and the fates of men. Let us call it statistical determinism. It is a very strong determinism indeed, but there is no other one. It leaves a wide berth for the feelings and passions of our kind. As a matter of fact, we know to-day mass feelings and, unfortunately, mass passions that are a very important factor in human geography.

More than to Nature, man bows to his own traditions and taboos, sometimes contrary to Nature's commands. Remember Kipling's story entitled William the Conqueror : There is a famine in some remote district of southern India ; trainloads of wheat are sent there from the Punjab ; but on receiving this grain men wail and weep and starve, because it is not rice. Another writer tells us about a besieged city in the ancient land of the Hebrews, where a full load of smuggled meat is thrown over the walls because it is pork. Fiction, of course, but true to life. The alimentary taboos are everywhere, sometimes harmful for a healthy diet, and sometimes sneering at the very gifts of Nature. Greenland has a capacity for some 18,000 Eskimos who live happily on fish and seal. But the very small Norse colonies in mediaeval Greenland had to die, because they would feed only on cereals, vegetables and beef. The Sikh troops in France during the first world war had to be backed by their own herds of goats.

As for human dwellings, many authors have discussed their appropriateness to climate, to building material, to the practical needs of local cultivation and storing. But what about a wine-grower's house without any cellar, as in some parts of southern Burgundy ? What about flat roofs for rainy and snowy weather, as in many parts of North America ? What about the paper house, unfit for any sound heating, in the Japanese country full of timber and bitterly cold in winter ?

The rural house, in almost any one of the old countries and even in Canada, is in fact the hallmark of tribal origin, often brought where it is by forgotten migrations from the very remote countries. The Balkan geographers know this very well and can name all human connexions of their very varied types of houses. The customary house reminds us of human origins, as does the pattern of fields and settlements and the names of local features. It can be used for tracing migrations. The geography of all these human facts is a geography of historical legacies. Much more than a natural product, the house of man is the stamp of his traditions. It depends upon folklore as much as, and apparently more than, upon physical environment.

The building of the house depends on sentimental motives too, and on magical rites. The Chinese chooses a pretty spot if he can, rather than a useful one. Like him, the native of the uplands of Madagascar builds his hut according to powerful rites of magic. The former cares very much about the sacred spots, and about all his deep-rooted habits. And so does the European. So let us not be

surprised if, after the first world war, some destroyed cities in northern France had to be rebuilt exactly as they were, complete with all their former inconveniences. The old Batavia in Java and the oil-ridden Curaçao in the Caribbean resemble ancient Dutch cities, and the old Saigon in Cochin-China looks like a small French town. Some railways in China had to curve round very ancient burial grounds; a large steel bridge in a large Canadian city had recently to deviate from a straight line in its construction in order to respect some venerated spot.

The same unwillingness to change habits is well known in the processes of daily work. Some Sudanese peasants bend very low in order to scrape the earth with short-handled hoes. Give them long handles, and they will saw them short. Give them wheelbarrows, they will put them on their heads. The Eskimo woman stands on her feet to wash her laundry on the ground. Give her a stool for the basin, she will climb on it, stand erect and bend lower.

Of course, no one will deny that physical environment can bear heavily on the possibilities of man. But there is almost always more than one possibility. The foremost of French human geographers, Paul Vidal de la Blache, pointed out some fifty years ago that any group of men is liable to make a choice. But we may assert that this choice is not so much a matter of crude interest as a matter of rite, of breeding, and of sentiment.

Some character in a French novel is defined this way: "He is like others, he prefers his passions to his interests." If we consider the latest changes in human geography, we can but confess there is more truth in this than in the view of Jean-Jacques Rousseau, and of the old-school geographers, according to which man is led by his belly. Modern geography could well study, not less than environments and ancient rites, the modern ideologies as a causal factor. What a prophet can do is shown in the expansion of Islam, with its boundless consequences for any kind of geography. On this very day they include some of the latest fashions in political as well as economic distribution of facts. And nobody can talk of geographical predestination on the site of such a lively capital as Mecca, in a stony furnace with a one and only, and sacred, well.

But let us leave aside nationalisms and fanaticisms and all kinds of prejudices and even displaced persons, although they are a very large part indeed of the present geography of man. It is another story and yet the same story: Man, always man, and the passions of man. Let us only remark that any boundary, with all its geographical implications, of races, languages, morals, customs, money, domestic production, trade and standards of living, is the work of man alone. It is always drawn upon some kind of agreement between men, even if it is grounded on a natural obstacle like the Caucasus—even if it is built in heavy stone like the Wall of China or the Wall of Hadrian, none of which three is a boundary any more.

Let us rather rely on the works of some geographical poets. "What a poet, this savage!" said Cecil Rhodes when he saw between mountain and sea the tomb of the native king Mozelikatse. Being of the same brand himself, he built an empire before his own burial in the same

visionary way. Marshall Lyautey in his austere tomb in Morocco works miracles among superstitious natives. The visions and tenacity of Ferdinand de Lesseps had the ways of the seas cut for all nations (so he thought) and started the avalanches of modern trade in the last century, the biggest transformations human geography had ever known in the far eastern countries as well as in some of the western ones. And what about King Henry of Portugal and his school of discoverers? What about Henry the Seventh and Queen Elizabeth and Sir Francis Drake and Sir Walter Raleigh? What about the conquistadores, and above all what about Columbus? The dreams of some dreamers are a very important chapter in the study of the influence of man on geographical environment.

A VERY considerable fact remains to be pointed out. There are now on the earth forty-two large cities with more than a million inhabitants, against one, maybe two, a century ago. Among this number eighteen only belong to Europe and thirty-three to the white men. And the huge metropoles are not all the cities of the world, not by a long way. So it happens that, from the beginning of the present century, human geography is no more a mere geography of the fields and farmers and peasants, but is beginning to become mostly a geography of towns and industries. It has become such, indeed, for almost all white peoples' countries and for a large part of Asia.

All these cities undergo a marked process of uniformisation, with the same railway stations, the same subways or street cars, the same automobiles, the same radios and movies, the same workers toiling no more under the sun and skies and birds but under the roofs of the production plants and to the screeching of sirens. This is human geography now, and this is the work of man.

Almost all the large cities were born with the means of rapid transportation of large tonnages over long distances for supplying all their necessities, and over short distances for innumerable parcels and people and for water and gas and electricity and sewage. It means that all cities are closely bound to civilisation, of which they enclose the more precious aspects. They, with civilisation, are doomed if man, again—always man—decides eventually to make a mess of it.

And it is ominously true that " we civilisations "—as Paul Valéry said between the two world wars—" we know to-day that we are mortal beings." And long before, the Arab geographer Ibn Khaldūn had written that " a civilisation is a transient crisis of enjoyment." And recently, Dean Inge similarly called civilisation " a disease that is almost fatal." But this last statement is more striking than convincing. Do not call us back to barbarism. Do not charge health with the responsibility of disease, like the fanciful Dr. Knock (" a healthy man is an invalid who doesn't know his sickness "). Do not accuse reason of what is unreasonable: do not accuse science of crime, civilisation of what is done against it. At last reason has given us the realisation of what we are and what we could be. Let us only be satisfied that man is not merely the subject, but chiefly the agent, in human geography.

Paper read, by invitation, to the Society, October 31, 1947.

SOUTH SLESVIG

By H. Stegmann

I

One of the most interesting frontier problems of the European mainland, a problem much older than those created by the last war, is centred in the southernmost part of the Jutland peninsula, containing the province of Slesvig, which is the borderland between Denmark and Germany.

The province of Slesvig is bounded by the Kongeaa (King's Creek) in the north and the Eider in the south, these two rivers being 140 kilometres apart, and by the Baltic and the North Sea, about 100 kilometres apart, containing an area of 8860 square kilometres. Its name is derived from the ancient capital city of the Duchy of Slesvig, residence of bishops and centre of local administration. This province belonged to Denmark until 1864, when, after the war of German aggression, the mother country was forced to cede the Duchy, which Bismarck incorporated with Prussia. After the first world war, however, Denmark recovered approximately one-half of Slesvig on the results of the plebiscite of 1920 within this province, so that the present Danish-German frontier divides Slesvig into what became known as North Slesvig and South Slesvig—the first belonging to Denmark and the second still within Germany—although these two parts, in actual fact, constitute one geographical entity and must be regarded as such. This article,[1] however, deals with the southern part only, the geographical background of present rivalry between Danish democratic ideals and German ways of living.

From east to west, Slesvig exhibits three varieties of landscape. Along the Baltic coast lies a rather undulating and fertile morainic formation, containing the greater part of the farming population. This coastline is indented by several 'fjords' leading to the principal towns, such as Haderslev, Aabenraa, and Sönderborg, north of the present frontier; the largest town, Flensborg, is just south of this. The middle of the country is mostly sandy moorland, with a relatively sparse population of smallholders, while the western coastal district along the North Sea is low, flat, and marshy, and bears some resemblance to the fenlands of East Anglia which, incidentally, derived its name from Angel (Anglia) in south-eastern Slesvig, whence some emigrants went to the east coast of Britain, giving their name to England.

The west-coast regions of Slesvig contain very extensive meadows with abundant grass, which even during dry summers shows emerald green and luxuriant growth, providing excellent opportunities for the local stock-breeders to raise their large herds of Friesian cattle. In prehistoric times these marshes reached far out into the shallow basin of the present North Sea, but less land was left dry after the sinking of the

level during the post-glacial period ; the spring tides, whipped up by westerly gales, have also taken their toll, leaving, however, a series of flat and sandy islands to give evidence of the former coastline. The sea between these islands and the mainland is very shallow and often quite dry at low tide, and is therefore called the Wade Sea. When the tides inundate this region, they bring in suspension great quantities of

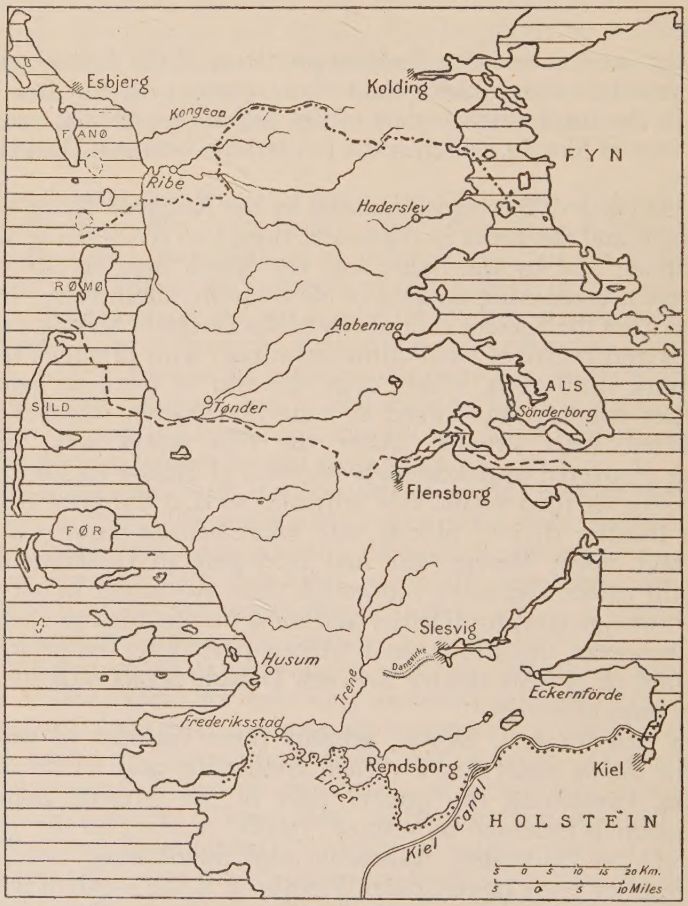

Fig. 1. Slesvig. Danish-German frontier, 1864-1920 -·-·-·-· Danish-German frontier since 1920 – – – –. Boundary between Slesvig and Holstein, the frontier of Sønderjylland (South Jutland) until 1864 .....

fertile silt from the rivers or washed off the shore, to be deposited on the sea bed during the ebb-tide. By means of dykes and dams, man, since the Middle Ages, has been defending this coastline against the spring tides, and vast areas have thus been reclaimed from the sea when the silting-up process reached a suitable level. But naturally such shallow waters offer few facilities for harbours, so there are not many towns of importance except for Husum, of cattle-market fame, and Frederiksstad, on the Eider.

II

Although these three aspects of the Slesvig landscape have left, to some extent, their different imprints upon the marsh-farmer, moor-crofter and east-countryman, respectively, these three population types differ markedly from the people living south of the River Eider, which has separated Danish and German lands for a thousand years. The Eider was the boundary of the Holy Roman Empire (see photograph) and separates the old Danish province of Slesvig from the entirely Prussian province of Holstein.

No earnest student could fail to draw distinctions between the people living north and south of this river, and between their different associations and origins. First of all, there is the evidence of local place-names. All countries have their characteristic toponymy, and it is a universally accepted fact that within the original settlements of Slesvig all place-names are either purely Danish or belonging to the group found in all Teutonic-language countries ; there are no purely German place-names. For example, names of towns or villages ending in *-inge* and *-sted* are in evidence from northern Norway to the plains of Lombardy, telling us of remote times when the Nordic and the south German tongues were more or less alike ; but the typically Danish suffixes, such as *-um*, *-löse*, or *-lev*, can be found only north of the river Eider. To this latter group, incidentally, belongs also the suffix *-by* (town) that Danish vikings introduced into England to lead a healthy linguistic life in Derby, Grimsby, Whitby, etc.

Rural architecture provides additional and significant evidence. The Slesvig farmsteads are built according to the same principles as those prevailing in the rest of Denmark, where the farm-houses are long, low, and narrow buildings pointing east and west, and, in the case of larger farms, having also two or three wings surrounding a central yard ; on the other hand, the Holstein type of farm-building, south of the Eider, is placed always at right angles to the road, and its height is greater in proportion to the length, and there is no yard. Also, the Danish farmhouses are always divided into separate units for living quarters, barn, and stables, while the German method tends to gather everything under the one huge roof. The big door in the wayside gable-end gives access to the barn portion, with the cow-stalls arranged on either side and the hearth in the background against the internal cross-wall of the living quarters.

Besides place-names and local architecture, there are plenty of other instances of the very marked distinction between the German and the Danish folk elements, such as local usage in agricultural methods and tools, in everyday life, in dress, and in the traditions of folklore, legend, and history. All tend to show that Slesvig is a province where two entirely different sets of association meet and compete.

III

The striking fact that the Danish folk element has survived constant German infiltration and Prussian rule can only be explained by the

intrinsic strength of the Danish character and its democratic ways. However, it was inevitable that the German language, often propagated by ruthless methods, should gain ground in Slesvig up to the end of the last war. While originally as Danish as the rest of Jutland, Slesvig has gradually become a borderland of national strife, so that the province now presents a very special case of vital importance to Denmark. It should perhaps be mentioned here that, besides the two main groups of people in Slesvig, there is also, along the west coast, a third group, namely, the Friesians, comprising only 40,000 souls, and less well known to the world than the famous cattle that are called by the name of their original breeders. The Friesian people are neither German nor Danish, and have to a certain extent preserved their own language, which is related to that of Holland and also to the English spoken in Saxon times. Apart from guarding themselves against attempts at Germanisation, the Friesians have taken little part in the national drama of Slesvig. To-day they side with the Danes, being fully aware of the advantages of Danish democracy and individual freedom.

Since the beginning of history, and during past centuries, Danish was the only language of Slesvig, apart from that of the Friesian minority. West of the city of Slesvig one may still find the traces of the Dannevirke or Dane-wark (cf. the Southwark of London, also built by the Danes), the rampart erected during the ninth century to break the German onslaughts from the south, and mentioned again and again in popular legend and factual history. Between this defensive wall and the river Eider there were originally extensive wooded areas, which formed the first barrier between the German and Danish realms —and also between Central Europe and Scandinavia. Up to the end of the last war, however, the Danish language was slowly receding under German pressure. It should be noted, however, that the language spoken does not always constitute proof of political affinities and loyalties, as all over Slesvig there are still instances of individuals who speak Danish, yet 'feel' German—and vice versa. The reasons why the Danish language in Slesvig had been receding for centuries, though very slowly, are quite clear. The German expansion in Hanseatic times, the political connexions arising from the fact that Denmark's Royal House of Oldenburg held the Duchies of Slesvig and Holstein, and also German influence through the Lutheran reformation, all tended to further the advance of the German language at a time when the united Reich was not yet in existence. Not until 1850 did German penetrate the eastern and western regions of South Slesvig. But this linguistic advance was experienced only in the cities and among the landed gentry, while the farming population, soundly conservative, spoke Danish until Slesvig came under Prussian rule in 1864. Even after this event a surprising number refused to abandon their native language, although they could only speak Danish in private.

North Slesvig, having preserved the Danish language to a greater degree, was able to preserve also its connexions with the rest of Denmark. The more intelligent of the young people found their ideals

within the Danish Folk High Schools, inspired by Grundtvig, that came into existence in the latter half of the nineteenth century. Danish books and newspapers were widely circulated in North Slesvig, and hope of reunion with Denmark was never abandoned. In South Slesvig, however, the spiritual and cultural unity with Denmark suffered severely, because the German language had penetrated to a considerable extent before most people had realised the danger of this development. And yet the people of South Slesvig did not accept the distorted ideals of Germany under Bismarck and Wilhelm II.

The inevitable result of this difference in the linguistic evolution in northern and southern Slesvig was that, in the plebiscite of 1920 after the first world war, the people of North Slesvig were reunited with Denmark while those of South Slesvig remained within the Reich, and the Danish-minded minority had to pin their hopes for the future on the promise of Denmark, voiced by her Prime Minister, that they would not be forgotten. So far they have been receiving such cultural assistance as could penetrate through the new frontier.

IV

During the twenty years between the two world wars there was still a solid Danish minority group in South Slesvig, especially in Flensborg ; the towns of Slesvig and Tönning also sustained a sound Danish movement. It must again be stressed that the language spoken gives little proof of national affinities : even the Danish-minded part of the population mostly spoke German, because Danish was officially banned in the schools in 1878—which fact, of course, made it more difficult to retain contact with Denmark and Danish ways.

The Weimar Constitution of the Second Reich gave the Danish minority the right to establish private schools where teaching was in the Danish language, though German had to be taught also ; but local administration undermined the results thus gained. About 1935 there were 1200 children in these Danish schools, but owing to all manner of pressure this number decreased further, and in South Slesvig a great part of the population succumbed to the enticement of Nazi promises. By 1939, however, the number of those who understood the true nature of Nazism was increasing far more than was generally realised at the time, freedom of speech and press being suppressed. And after the capitulation of Germany, pent-up Danish feelings gained overwhelming strength and depth. The " Danish Union," which had to content itself with being called " South Slesvig Union " (Sydslesvigske Forening), had 3000 members during the last years of Nazi domination, and by April 1947 the membership had risen to 66,000. The only Danish newspaper, *Flensborg Avis*, is read by the great majority of the indigenous population.[2] At the elections for the Provincial Council in October 1946, 58 per cent. of the native population of 340,000—excluding the refugees from other parts of the Reich settled in South Slesvig—voted for candidates belonging to the " Danish Union." In April 1947 the Danish-minded candidates for the Local Government Council—jointly administrating South Slesvig and Holstein—obtained 100,000 votes, or 67 per cent. of the poll.

The Danish Movement is especially active in establishing Danish schools. In April 1947 there were about 60 such schools—in as many districts—with 13,000 pupils, all established in accordance with the wishes of the local population. Requests for 130 more schools, to teach at least an extra 20,000 pupils, have been lodged with local authorities, but owing to lack of buildings [3] and teachers this scheme has not yet been carried through. The very fact that so many parents, who themselves were educated entirely by German methods, want their children to be educated in the principles of Danish democracy, is

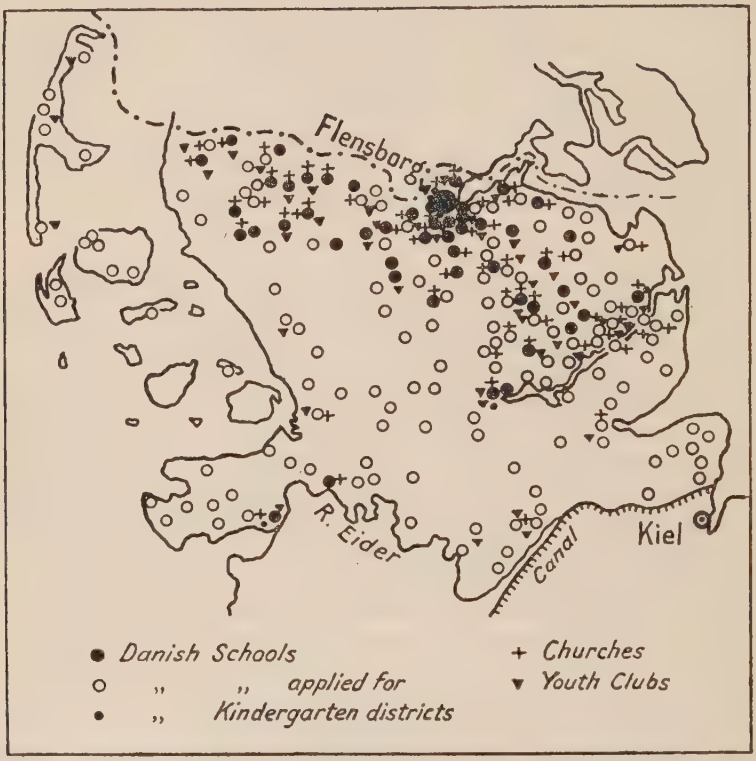

Fig. 2. South Slesvig. Danish churches, schools, and youth clubs.

an indication of the sincerity of this rapidly growing re-orientation towards Denmark.

One further factor may help to account for the rapid spread of the Danish revival : South Slesvig, with an indigenous population of about 340,000, has now been forced to receive an influx of nearly the same number of German refugees mainly from districts east of the Oder, the present ratio between natives and newcomers being 1 : 1. The native South Slesvigers are daily exposed to abundant demonstrations of how little they have in common with these aggressive East Prussians, who constitute a very real, and potential, menace to Slesvig and its traditions, and, in fact, to Denmark.[4]

It goes without saying that the problems of South Slesvig are

being followed minutely by the people of Denmark and by their parliament and government. At present, the Danes in Denmark have gone no further than giving the Danish-minded people of South Slesvig what cultural and economic aid and assistance they can. Also Denmark has expressed her wishes to the British Military Administration of South Slesvig, that the East Prussian settlers be removed, and that the local administration of South Slesvig be separated from that of Holstein, because the joint German Local Government at Kiel, in Holstein, is encroaching upon the freedom and natural rights of the Danish-minded South Slesvigers. Yet Denmark has not asked for South Slesvig to be re-united with Denmark, as the Danish government wants to avoid any appearance of fishing in troubled waters. Nor has Denmark officially asked for a plebiscite in South Slesvig to decide the national future of the province, though a plebiscite giving a majority for re-union with Denmark—as in North Slesvig in 1920—is the only means by which Denmark, without abandoning her democratic principles, could accept re-union. It is, however, significant that a steadily growing majority of the population of Denmark—in October 1947 a 'Gallup' Poll set the figure at 76 per cent.—want Denmark to adopt, officially and efficiently, a policy aimed at bringing about a separation, under one form or another, of South Slesvig from Germany, so that South Slesvig be placed, for a period of some years, under international administration—for instance, under the auspices of the United Nations. During this period the Danish Movement of South Slesvig would be given an opportunity of proving the stability and durability of the desire for re-union with Denmark. After the end of such a period a plebiscite should be held to determine the ultimate national status of the province.

[1] The author, Knight of the Order of Dannebrog and a graduate of the University of Copenhagen, is Lecturer in History and German at Aalborg.

[2] The Union has been denied political rights and, strangely enough, the British Regional Commissioner has also refused to allow *Flensborg Avis* to publish an edition in German.

[3] According to information received from *Sydslesvigske Udvalg*, Copenhagen, "the German Civil Administration in Kiel do everything to prevent the Danish Movement from getting such buildings, and have in some instances removed the Danish schools already established to poorer quarters."

[4] These refugees have been granted full civil rights and a share in municipal administration, and are not being transferred back to Germany proper. Thus, unfortunately, the Germanisation of the Old Danish Province and the destruction of Denmark's bulwark against Germany are at present being greatly promoted.

Grateful acknowledgment is due to the author, but also to Mr. Tyge Lassen, Chief Editor of *Aalborg Amtstidende*, for supplying maps and illustrations, and to Consul Erik Schacke for relevant information.—Ed.

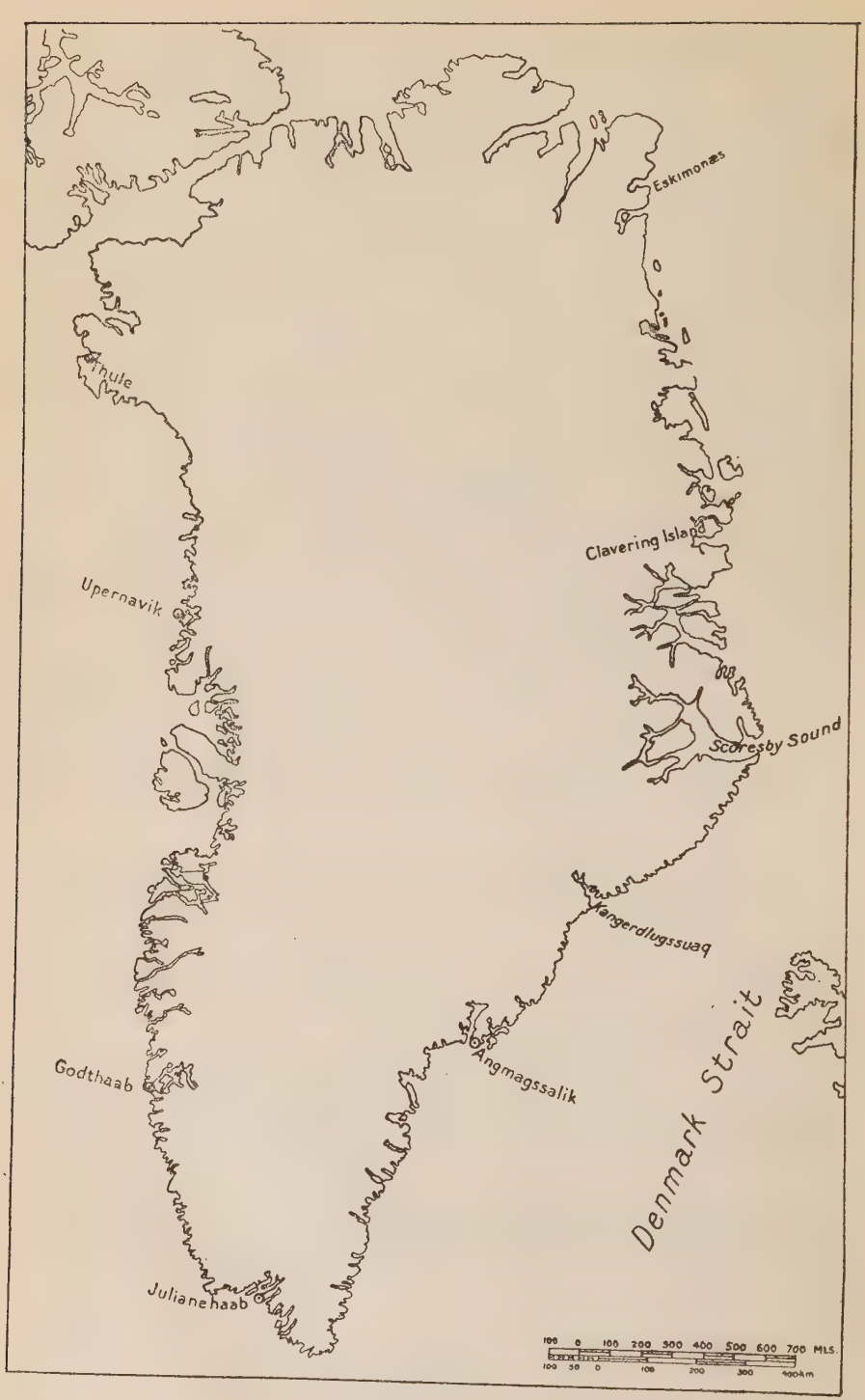

Fig. 1. Greenland. 1 : 15,000,000.

EIDER STONE, RENDSBORG PORTAL

MARKING THE BOUNDARY OF THE HOLY ROMAN EMPIRE

FLENSBORG

OLDER TYPE OF DANISH FARM-HOUSE, SLESVIG

TYPICAL FRIESIAN FARM-HOUSE, WESTERN SOUTH SLESVIG

THE ESKIMO OF EAST GREENLAND—PAST AND PRESENT

By Captain Ejnar Mikkelsen

I

The Eskimo of East Greenland settled on that coast about the fourteenth century and throve for some hundreds of years, spreading along the sea-board and settling in practically all localities where they—the most frugal of mankind—could find a basis for existence by hunting the sea mammals. Hard times befell, however, probably mainly because of the ruthless European whalers and sealers who followed their occupation far out to sea. The tribe waned on the coast from Scoresby Sound northward (Fig. 1), and became practically extinct, being only seen once by Europeans, in 1823, when Captain D. C. Clavering's party, on Clavering Island, met twelve Eskimo, who fled into the wastes of then unexplored north-eastern Greenland and were never seen again.[1] But wheresoever since then explorers have travelled along that icebound coast, they have found traces of the once populous tribe, ruined dwelling-places, depots, and graves : woeful sights in a desolate country.[2]

When, about 1750, Danish travellers began to explore the south-east coast of Greenland, they met many Eskimo ; but later explorers found that the tribe was dying out fast, and in 1829 only 581 Eskimo were living along the then known huge stretch of coast. In 1884 even this handful of humans had dwindled to 135 individuals, and it was evident that the extinction of the tribe was drawing near. In 1900 the last of these people had either died out or left for the south-west coast of Greenland, where they hoped to find better conditions.

In 1884 the Danish explorer Gustav Holm reached the Angmagssalik district and there found 413 Eskimo, who later proved to be definitely the last of the East Greenland tribe.[3] This people had for generations lived in complete isolation, with only very scanty knowledge of other Eskimo far to the south, and had in their isolated existence developed habits and a way of living which in themselves carried the germs of death.

Fishing had ceased for some reason or other, and the main basis of existence, the hunting of sea mammals, had decreased to such an extent that in days of scarcity—and they were almost permanent—the tribe could only find food for those members of the community who could provide food or work for the common benefit of all—that is, the more mature persons. New-born infants were therefore set out to die in days of stress, and old or infirm individuals were left behind in evacuated dwelling-places to shift for themselves, and to die of starvation when there was no more food to be had. Or they simply threw themselves into the sea, committing suicide to get out of their misery. Cannibalism was not infrequent in days of dire famine. This does not mean, however, that human beings were slain in order to be eaten, but that the bodies of people who had died of starvation were sometimes eaten by the survivors, so that the latter would have a chance of living. Some of the Eskimo fled from the spectre of starvation and

tried to eke out an existence beyond the famine zone in desolate localities, where, however, starvation overtook them in some cases. On the basis of information gathered by Gustav Holm during his winter at Angmagssalik in 1884-85 it can be figured out that 16 per cent. of the population had died from starvation, or its consequences, in the two years preceding his arrival.

The hunting of sea mammals was exceedingly dangerous with the primitive stone weapons of old, and many a family provider failed to return from the chase to his woman and children, left literally without a morsel of food in the hut. And then, too, they were likely to die if they lived alone in some desolate spot, or if other hunters of the settlement had no surplus to spare for them. Manslaughter was rather common, and disastrous blood-feuds resulted from the violent death of any man, causing more manslaughter, always that of an able-bodied hunter. So frequent were the violent deaths of able-bodied men that, out of a total population of 256 adults on the whole south-east coast of Greenland, 22 women were widows, though 10 men had more than one woman, some two or even three ; and for each able-bodied hunter who perished, the existence of the rest of the community became even more precarious than before. Suicide was rather common for reasons which seemed quite inadequate, and illness took a heavier toll in the old Eskimo communities than probably anywhere else in the world, as the means at their disposal for curing sick people were very ineffective indeed, or when the *angakoq*, the medicine-man of the tribe, was allowed to try his brutal arts on the sick person.

And if to these many causes of death be added the fact that the women bore, or possibly raised, few children—on an average only 1·6 children each—then it is evident that, for this reason alone, the tribe seemed doomed to extinction. Furthermore, this starving and suffering Eskimo community was oppressed by the prevailing dread of a host of evil spirits bent on doing human beings harm at every turn ; and the Eskimo seem to have had no single good spirit to whom they could turn for relief from all their dread of natural enemies and super-human beings. It is likely that the Eskimo along the whole east coast of Greenland had developed habits and lived such lives as the Angmagssalik Eskimo at the time of their discovery by Gustav Holm in 1884, and that these hard and gruesome conditions had played a principal part in their extinction.

II

In the hope of saving the little Eskimo community found at Angmagssalik, the Danish government decided to supervise their future and establish a government-controlled settlement at Angmagssalik, as had previously been done with such good results on the west coast of Greenland, and the district was at the same time declared a closed territory, where nobody could go without permission from the Danish Government (Greenland Department), so that the natives could be given an opportunity to adapt themselves in peace to new conditions of life.

The settlement was established in 1894, but in the intervening ten years the Eskimo tribe at Angmagssalik had dwindled from 416 individuals to 247, and the coast further south had been practically depopulated. The establishment of the settlement under Danish administration caused a very great change in the lives of the natives, and the Stone Age conditions of former days came to a sudden end. The change from Stone Age weapons to fire-arms made hunting far less dangerous than before and gave larger returns, whereby conditions

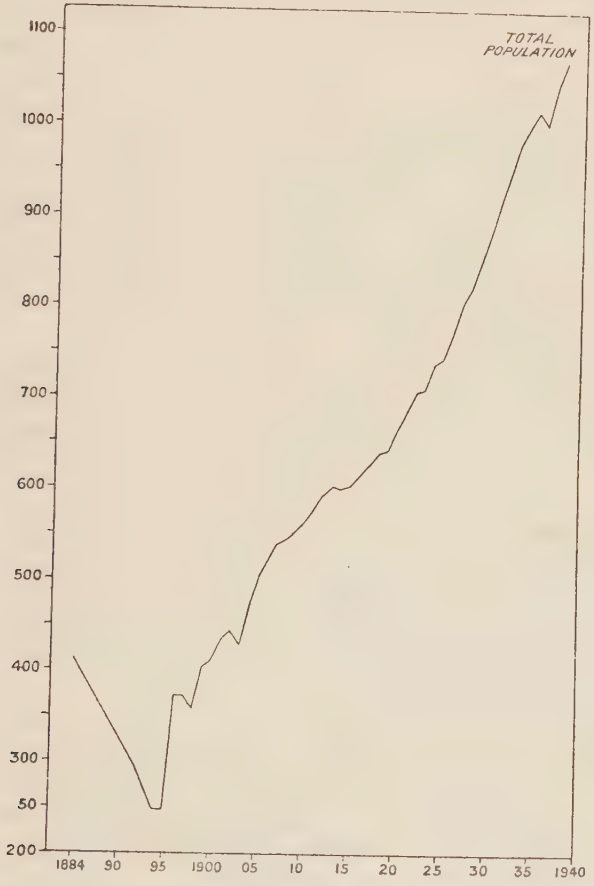

Fig. 2. Population of East Greenland, 1884-1938.

of existence were bettered considerably. The possibility of exchanging the surplus of the chase for imported European commodities, such as iron tools, textiles, cereals, sugar, etc.—all, of course, absolutely unknown before—changed within a very short time the whole mode of existence of the tribe. But the Eskimo could not sell or exchange vital necessities, such as blubber, sealskins for wearing apparel and kayaks, etc., in the government-controlled shop, and it was—and is—strictly forbidden to sell or to give any kind of alcoholic drinks to the natives.

The change in the natives' living conditions brought about by

these means checked practically at once the very high death-rate of adults and children, and as the average number of children to each married woman increased from 1·6 to 2·8, from 1894 to 1944 the population increased (Fig. 2) from 247 individuals to 1308, of whom 1070 live in the old Angmagssalik district and 238 in the settlement at Scoresby Sound, established in 1925 and peopled with natives from Angmagssalik to relieve the serious over-population, then already apparent, of the original district.

When the settlement was established a Danish administrator was appointed to teach the Eskimo new conditions of life and to help them to adapt themselves to it. At the same time, a missionary was sent out to convert the natives in due time to Christianity. The last heathen Eskimo was baptized in 1922. The careful and laborious guidance of the Administrator and the Missionary have radically changed the life and doings of the Eskimo. Manslaughter ceased within some very few years, children and old people were cared for in days of scarcity and were not left to die as before, and the formerly dominant dread of evil spirits was to a great extent uprooted. The power of the medicine-man (*angakoq*) was broken, the natives now frequent the church whenever there is an opportunity, and Christianity has got a very strong grip on them all.

Children between 6 and 14 years of age must all attend the schools established at the main settlement and at the smaller outstations, where native instructors now teach them some Danish, religion, a little geography and history, to read and to write their own language, as well as figuring small sums. Formerly, of course, they had no written language, nor any ideas about the outside world; no sums or reckoning but the very simple : counting fingers and toes, whereby they reached units of twenty—a man. For instance, should an Eskimo count 55 seals caught within a year, he would say that he had caught 2 men, 10 fingers and 5 toes. Now, practically all natives under 35 years of age are able to read and write and do small sums, so, in comparison with former days, " advancement in letters " is great indeed.

A small infirmary is established in the main settlement, where illness is treated by a Danish doctor and nurse, assisted by young native women. The best of these are taught, in Greenland or in Denmark, to be midwives, and are trained to give first aid in cases of minor accident or illness in the small outstations. At the main settlement there is a home for old people, and all at the age of 55 have the right to receive the old age pension, on which they can exist without being a burden to their near relatives. Orphaned children are cared for at the expense of the Greenland Administration.

The hub around which the whole work of reconditioning the natives turns is the store-house or shop, filled with commodities of European origin, and managed by a Danish government official. The Greenland Department decides every year what prices have to be paid for the European goods as well as for the native produce offered for sale.[4] The shop, therefore, can be used as a very important educational factor. All commodities deemed beneficial to the natives are sold at

a low price, often below cost, whereas luxuries, such as tobacco and particularly coveted clothing, etc., are sold at a higher price. The demand for imported commodities is thereby to a great extent regulated, and should the Administration for some reason or another find that it would benefit the natives to engage more than usual in a particular pursuit—shark fishing, for instance—then the price for shark liver is fixed so high that shark fishing becomes a comparatively attractive means of livelihood.

The natives are like children and as a rule do not themselves realise what is beneficial for the community. They must still to some extent be coaxed to follow the guidance of the Danish Administrator or the Greenland Administration. However, they are intelligent and have quickly adapted themselves to new conditions of life, so that the Administration has found them now so settled in their new ways that, to a certain extent, they are able to take part in the administration of their own affairs. Men were consequently elected to form a Council at Angmagssalik and at Scoresby Sound, presided over by the Manager of the settlements. This Council has the right to advise the Greenland Administration as to proposals for bettering the conditions of the natives, and can give support in kind to all natives in need as well as necessary hunting equipment to young men who are without the means to start hunting. The Council can also give loans to families who wish to improve their houses, and, in case of crime, men of the Council must assist the Manager to pass suitable sentences—in accordance with laws worked out for these primitive communities.

Formerly the Eskimo lived a very nomadic life and roamed up and down the coast, but the establishment of the settlement, unfortunately, caused the natives to concentrate around the main station in order to be as near as possible to the government store and shop. From the very beginning the Greenland Administration was aware of the danger in centralising a population which must exist by hunting and fishing, pursuits necessitating dispersal along the largest possible stretch of coast. Several regulations have been in force since 1894 to counterbalance this regrettable tendency, but with only indifferent success. As the population grows in number it is, however, increasingly necessary to enforce these regulations and by different means to induce or compel the natives to move into outlying districts and lead a nomadic life, as their forefathers did.

The natives in Angmagssalik district now live in sixteen different places, at Scoresby Sound in five, but with the great over-population in relation to the hunting possibilities at Angmagssalik, further decentralisation is necessary. Some of the outstations have also become too populous in relation to the nearby stock of game. We are therefore now attempting to induce the natives to move further away from the main settlement and to reoccupy hunting grounds which have not been in use since colonisation. The people begin to realise the necessity for this measure, and our endeavours are succeeding slowly. Angmagssalik natives are now living as far south as almost half-way to Cape Farewell, and as far north as Kangerdlugssuaq, half-way to Scoresby Sound. In order to meet these natives' just demands for

imported commodities, without which they cannot now exist, small shops or depots are established at these outlying posts, where schooling facilities are also attended to.

The continual decrease of the stock of seals along the East Greenland shores prevents the Eskimo from finding a food supply—as formerly—in coastal waters, and other means of livelihood must be found for them. Shark fishing, with the sale of the rather valuable liver, adds fairly largely to the support of the natives, who, however, are so very conservative, that it is difficult to induce them to undertake an occupation which their forefathers thought below man's, or rather, below a hunter's, dignity. This kind of fishing has consequently, until quite recently, been considered an occupation fit only for women, children, or men too old or infirm to go seal- or bear-hunting. To overcome this opposition to an employment of vital importance to the natives in general, small shops have been established near the shark-fishing centres and stocked with highly desirable imported commodities. These commodities, however, can only be bought with money which has been earned by the sale of shark liver, and by these means we constrain the hunters to participate in shark fishing, and are slowly succeeding in breaking down their resistance to this occupation.

Formerly, all kinds of private dealings were made by barter only, but a monetary system was necessarily introduced shortly after the colonisation, and dealings with the government shop, or between the natives themselves, are now practically all based on cash.[4] The natives' yearly income in money, however, is necessarily insignificant when measured by our standards. To begin with it was, of course, nil, but in Angmagssalik it has gradually risen to an average of Kr. 32.12 per individual ; in Scoresby Sound, where fox hunting is considerably better than at Angmagssalik, it is Kr. 112.22. To this income in money must, of course, be added the much larger indirect income in the form of natural products, such as meat of seals and bears, blubber and fish, etc., obtained in the waters off the hunting districts, which is the real foundation of the natives' existence.

It must seem impossible to exist on so scanty a money income, and it is difficult to give a general idea of the bases of existence for a community living under such unfamiliar conditions. The only way is to compare the average Greenlander's existence with a generally known factor, such as the life of the working classes of Europe. Even this parallel is exceedingly difficult to draw, but some idea can be conveyed by the information that the calorific value of the average East Greenlander's food, bought or self-produced, is larger by far than that of most Europeans, and that their clothing is not much worse than that of the average European workman or his children. Their houses or huts are of necessity small and cramped, but taken on an average, it can safely be claimed that the existence of an East Greenlander is not more straitened than the average of poorer European workmen and fishermen—their demands are necessarily small.

The above statements about the population of East Greenland refer principally to conditions in Angmagssalik, but they are equally valid for the Angmagssalik emigrants who settled in Scoresby Sound

in 1925—with this addition, that the living conditions are easier at the latter place owing to the larger income derived from hunting the rather valuable Greenland fox. In Scoresby Sound no overcrowding threatens for many years to come, as hunting seems to be good in all the large ramifications of this huge fiord district.

The changes in the modes of life and the living conditions of the natives of East Greenland have been very great within the fifty years since they were taken in hand by the Danish Government, but great as the changes are, the natives have lived well up to the entirely new standards and, as far as can be judged, more civilised conditions have not spoiled them—so far, at least.

III

It was greatly feared that the last world war, which drew Greenland into its vortex, would have a detrimental influence on Danish endeavours to bring the natives safely across the chasm which separated their former Stone Age existence from the hoped-for future, with its European influences and aids to life.

The presence of soldiers in any community is, or can be, rather demoralising, and the more primitive the community the greater the danger. Quite a large body of soldiers has been stationed in the midst of the Angmagssalik Settlement during the war, and the Eskimos have seen modern war activities in their formerly secluded country. They have seen planes by the hundred flying over their mountain peaks, seen war-battered ships seeking refuge in their calm fiords. They have seen ships of war, or ships with supplies, coming to their country at almost any time of the year, instead of, as formerly, the once yearly ship with necessary stores ; and the steps towards civilisation have been hastened considerably by their more or less surreptitious intercourse with the American soldiery, who did not know the background for our strict protection of the natives.

There were reasons enough for fearing a good deal of psychological damage done by this abrupt change from a very peaceful and secluded life to a wholly new and exceedingly intensified existence, so unlike anything the natives had been led to expect from the white man. It cannot be denied that these fears have been justified to a certain extent; but, on the other hand, the conditions of war were so strange and overwhelming, that the natives were not able to grasp them to their full extent. The days of war, however, with their strange and often unfortunate happenings, seem to be forgotten by the natives almost with the departure of the soldiers and the cessation of war's activities, and in general they seem to have been of a sound enough mind not to have suffered any serious or lasting psychological harm.

Some new diseases have unfortunately been introduced by the soldiers, but with care and patience we hope and believe we can remove this curse of civilised man from the native communities. But the soldiers have left behind them some children with native women—for that matter surprisingly few—but still enough to taint the Eskimo tribe for ever ; and our proud boast, that fifty years' contact with white

men had not hitherto resulted in a mixture of races, does not hold good any more : the wholly pure Eskimo tribe of East Greenland has most regrettably ceased to exist.

If nothing unforeseen happens to interfere further with the Danish work for the natives of East Greenland, it seems beyond doubt that they will go on as they have done in the past : bettering their living conditions and increasing in number, so that in some few generations they will be settled in practically all localities along the coast, where their ancestors once lived such a precarious life that it resulted in their total extinction, except at Angmagssalik.

With conditions in East Greenland known as we do now, we can assure the natives of yearly supplies from Denmark in exchange for their surplus produce. And with the better, and safer, living conditions thus provided, they now can rest assured that no fatal calamities can befall any native settlements along the coast—neither those existing to-day, nor settlements the future will necessitate in order to secure sufficient hunting grounds for the rapidly growing population of East Greenland Eskimo—or Greenlanders as we prefer to call them now—who within the last fifty years have passed through the very difficult transition stage from an utterly untouched Stone Age existence to one controlled and subsidised from Europe.

Lecture to the Royal Scottish Geographical Society, Glasgow, January 14, and Edinburgh, January 15, 1948.

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ESKIMO, SCORESBY SOUND

OLD-FASHIONED SCHOOL

FIRST COUNCIL, ANGMAGSSALIK

WEATHER STATION, KANGERDLUGSSUAQ

MAIN SETTLEMENT, ANGMAGSSALIK DISTRICT

CHRISTENING PARTY, 1938

CHAPEL-SCHOOL, KULUSUQ

ACROSS THE CHILCOTIN PLATEAU TO THE RAINBOW MOUNTAINS

By George A. Cumming, b.sc., ph.d.

Immense areas of British Columbia have been seen only by prospectors, surveyors, and trappers. Fur trading was probably the first industry, but it was the discovery of placer gold which brought the first influx of pioneers. When the placer deposits had been worked out, the search for the lode deposits led to the discovery of mineral ore bodies of many kinds. Mining is, after forestry, the second in value of the province's primary industries. To maintain this industry in a healthy condition, unceasing search must go on for more of the earth's hidden treasures, and prospecting is an important profession in British Columbia.

Summer is the prospecting season, and each summer some hundreds of men are out in the remote places of the province. Some work alone, perhaps alternating a summer prospecting season with a winter on a fur trap line, and often ill-equipped both as to equipment and knowledge. At the other end of the scale are highly organised parties often financed by wealthy mining interests and including trained geologists and mineralogists. The journey to be described was made with such a party in August and September 1947. The party, under the leadership of Professor H. V. Warren of the University of British Columbia, numbered six and travelled by means of saddle horses and pack train.

To the north of Vancouver and stretching up into Alaska is the great mountain mass of the Coast Range. Deeply indented by fiords on its seaward side, broken up by profound canyons and deep glacial lakes, densely forested on the lower slopes but rising into majestic peaks like Mount Waddington — 13,260 feet — with vast ice-fields and glaciers, this region remains little known to ordinary travellers (Photo. 1). Only two railways and no roads cross the range: the Pacific Great Eastern Railway follows a transverse valley from Squamish, at the head of Howe Sound, to the Fraser River, while further north the C.N.R. reaches the ocean at Prince Rupert. Geologically, the Coast Range is a great granitic batholith, some 60 to 100 miles wide, with mineralised contacts on either side.

On the east side of the range is the region known as the Interior Plateau, a vast undulating upland incised by deep river valleys such as those of the Fraser and Chilcotin. Geologically this region is of Mesozoic and Tertiary sediments. There are also great areas of Tertiary lavas, and almost everywhere a covering of glacial and fluvio-glacial deposits. This is also part of the interior dry belt in which the dense forests of the coast give place to open grassland and scattered woodland. Some of the great lode mines of British Columbia, Premier, and the gold mines of Bridge River, lie in the mineralised contact zone on the east flank of the Coast Range, and the whole eastern flank is promising country for the prospector.

Professor Warren's party had been in the field since June and for the last part of the field season had decided to make a reconnaissance

along the east flank of the Coast Range from Kleena Kleene as far as the Rainbow Mountains, an outlying range of volcanic rocks near the 53rd Parallel and on the south-east fringe of Tweedsmuir Park.

The country travelled was over the western part of the Chilcotin Plateau, that part of the Interior Plateau which lies west of the Fraser River and is drained by the Chilcotin and its tributaries. Open country with much grass, it is the furthest north of the great range lands of North America, the cattle country of British Columbia. Most of it lies between 3000 and 4000 feet altitude. The Chilcotin and its tributaries, which drain to the Fraser, and the Homathko, Kliniklini, Bella Coola, and Dean Rivers which head in the western part of the plateau and drain through the Coast Range to the sea, are little below plateau level near their head waters but have eroded deep valleys eastward and westward, the Chilcotin being 2200 feet below plateau level where it joins the Fraser. In general, bench lands or tiers of terraces adjoin the streams, and nearly all of the scattered settlement is on these terraces. Toward the western part of the plateau woodland predominates, settlements are fewer, and towards the Rainbow Mountains one passes into country only visited by Indian hunters and an occasional prospector or trapper.

Kleena Kleene, where Professor Warren and I joined the party, is about 200 miles in air line distance from Vancouver ; to reach it one had to travel over 500 miles, by sea to Squamish, by P.G.E. train to Williams Lake and thence by the weekly mail truck over the Chilcotin Road to Kleena Kleene. Three days were spent in covering this distance, sufficient commentary on the difficulties of communication in British Columbia. The two days spent on the Chilcotin mail reminded one vividly of similar but shorter runs in Scotland, say from Aberfeldy to Bridge of Balgie, or from Lairg to Loch Inver, the same type of kindly informative driver, the same type of varied load, and similar stops and conversations on local affairs. The surrounding country, however, is very different and so is man's adaptation to it. Timber takes the place of stone : the cattle fences of whole pine trunks and the log cabins and ranch buildings become as familiar a feature of the landscape as the ' dry stane dykes ' and stone cottages of the Scottish countryside. There is a considerable Indian population in the region, and there are several Indian villages each with a conspicuous Roman Catholic Chapel.

The Chilcotin Road runs westward from Williams Lake for 200 miles to Anahim Lake. It cannot be called a good road, and the last fifty miles to Anahim Lake is little more than a pioneer track. It is likely that in the near future this road will be vastly improved because it follows an age-old Indian trail to the coast. From Anahim Lake this trail, suitable now for horses only, crosses the plateau westward and descends to the valley of the Bella Coola River where it joins the road to Bella Coola on the coast. The gap between the ends of the two roads is about thirty miles. Some years ago a government telegraph line was built connecting Bella Coola with Williams Lake following this route. This is a route of high strategic value. It was traversed from end to end under winter conditions in 1944-45 when a force of

the Canadian Army carried out " Polar Bear Exercise." The only really good maps of the area are those which were specially made for this exercise.

About 130 miles from Williams Lake it is evident that the western edge of the plateau is near. The country is more wooded, mainly

Fig. 1. South-western British Columbia, showing location of map (Fig. 2).

lodgepole pine with aspens and cottonwoods in the wetter places. Where the timber thins to allow a view the whole horizon to south and west is a wall of snow-capped peaks, the Coast Range. The road which has been following the Chilanko River, a tributary of the Chilcotin, turns south-west along the stream which flows out of Tatla Lake. This lake, over twenty miles long, occupies a finger-like depression between banks of drift perhaps 200 feet high. The road parallels the lake to

the south, and the surface of the drift here contains hollows occupied by small lakes without apparent outlet, perhaps kettle holes.

It was about here that one began to realise the extraordinary interest of the topography, especially in its relation to glacial and post-glacial drainage changes. This interest was further stimulated on reaching Tatla Lake Ranch and Post Office at the west end of the lake. Here an alluvial swampy flat has filled in the west end for several miles, providing tracts on which oats, timothy, and rye grow fairly well. Mr. and Mrs. Graham have also a well-stocked garden at the ranch, in which many kinds of vegetables and strawberries do well—this at an altitude of 3000 feet.

It is difficult to think of a place more intriguing to a student of physiography than Tatla Lake Ranch. The ranch house stands on a terrace a few feet above a small ribbon-like lake, rather like a pool left at low-water stage in a river. About 200 yards to the west a small stream descends from a similar pool at a slightly higher level and the valley continues westward towards Kleena Kleene. To the north of the house is a steep bluff of sand leading up to a terrace about 100 feet higher.

To the east lies the hollow containing Tatla Lake. To the south is wooded country rising gradually then culminating about twenty miles away in a great snow-capped ridge, the Niut Mountains, over 10,000 feet, the beginning of the Coast Range proper. The eye is caught by great valleys leading into the mountains at each end of this ridge. Both cut through the Coast Range to the sea, probably antecedent in origin. To the south-east is the valley of the Homathko, once surveyed as a possible route for the C.P.R., and the scene of the massacre of Waddington's survey party by Indians in 1864. To the south-west is the valley of Mosley Creek, the west branch of the Homathko (Photo. 2). Looking up this valley one glimpses the great glaciers and ice fields surrounding Mount Waddington, the monarch of the Coast Range. Forming the western portal of this valley is Perkins Peak, 9380 feet. Rising high on the flank of this mountain and draining north-east towards Tatla Lake is Miner Creek. About four miles from Tatla Lake this stream turns sharply north-west to One Eye Lake and the Kliniklini drainage—a clear case of river capture, and explaining the pools and stream near the ranch house as part of the former course of Miner Creek.

Here is a rather unique case of radial drainage. From within a radius of five miles from Tatla Lake Ranch water may find its way to the ocean by four very diverse routes: by Tatla Lake and the Chilcotin-Fraser system, a journey of perhaps 600 miles, or by the Homathko, Mosley Creek, or Kliniklini, journeys of from sixty to eighty miles. There has been, undoubtedly, great disturbance of the drainage pattern in this area. The divides between the various streams seem to be low ridges of sandy drift. In addition to the valleys mentioned there are others, particularly the depressions containing Martin Lake and Eagle Lake, to the north and south of Tatla Lake respectively, which suggest abandoned drainage channels. There is a rich field here for the investigation of drainage changes, and although

time did not permit a long stay at Tatla Lake it did create a keen interest in the country further west.

In a more settled country the qualities of site of Tatla Lake would make it an important route centre. As it is, there are roads leading to Tatlayoko Lake in the Homathko valley and to some outlying small ranches in Mosley Creek valley, which the post office and store

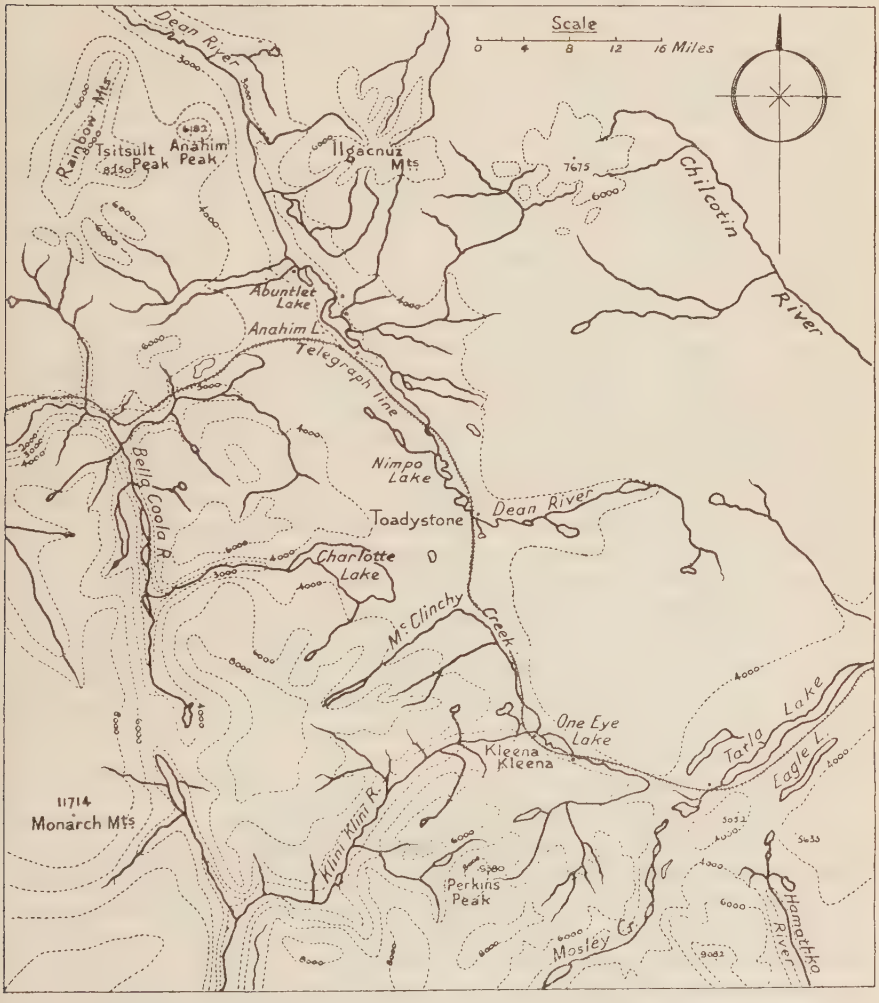

Fig. 2. Chilcotin Plateau and Rainbow Mountains, British Columbia.

serves, as well as the Chilcotin Road west to Kleena Kleene. The road to Kleena Kleene winds gently upward through sandy country timbered with jack pine and over the low sandy divide to where Miner Creek turns north-westward. This stream meanders in tortuous fashion through alluvial flats covered with willow and cottonwood. Some of the flats have been cleared, and one remembers haying going on at one small ranch and the sight of a few sheep at another, and that

these were the only settlements in the fourteen miles to Kleena Kleene.

Kleena Kleene Post Office and the end of the mail run from Williams Lake is at the east end of One Eye Lake which is about three miles long. Mr. McKill, the Post Master, has several cabins to rent and acts as guide to hunting parties. The soil here is sandy and in August was very dry and dusty. There are several ranches near the lake engaged in stock raising. Some land has been cleared to grow winter feed. There are also a number of wild meadows.

The Kliniklini River flows out of the north-west corner of the lake and follows a course through deep canyons to reach the sea at Knight Inlet, sixty miles away. About a mile after leaving the lake it is joined from the north by a main tributary, McClinchy Creek. Here is another clear case of river capture. The elbow of capture is only half a mile from the west end of One Eye Lake, and the wind gap by which McClinchy Creek once entered One Eye Lake is a prominent feature of the view along the lake from McKill's (Photo. 3).

The flat plateau top visible to the left of the photograph is the outcrop of a horizontal lava flow, but it also seems to represent the base of a great basin extending from the head-waters of McClinchy Creek to Tatla Lake and perhaps beyond, a former lake basin now being eroded by the present drainage. Support for this may be found in the high cliffs of stratified silts and sands which border McClinchy Creek. One can envisage a stage in the history of this region when a great lake similar to Eutsuk Lake in Tweedsmuir Park drained eastward to the Chilcotin as Eutsuk Lake now drains eastward to the Nechako. Headward erosion or the removal of an ice or drift barrier enabled the Kliniklini to tap this lake and capture the head-waters of the Chilcotin system. One can picture the same fate awaiting the lakes of Tweedsmuir Park when the Kimsquit and other rivers have eroded their head-waters a little further through the Coast Range. This explanation seems to fit the extraordinary gallows-like stream pattern of the head-waters of the Kliniklini.

On the Kliniklini River at the west end of One Eye Lake is an incongruous building in this country of log cabins. It is a telegraph repeater station on the line between Bella Coola and Williams Lake. Here is also a meteorological station. Mr. and Mrs. Colwell who live here have a small ranch with cattle and some sheep. Earthworms are absent, but Mr. Colwell had a supply sent from Alberta by mail ; they have found the river alluvium to their liking, and the result is seen in an exceedingly prolific vegetable garden. Summer day temperatures here are in the 70's; in winter -52° F. have been recorded. Night frosts occur, as we found, even in August. This place was an old Indian camp site and numerous artifacts are to be found, mostly arrow heads or scrapers of obsidian. The source of this volcanic glass was the summit of Anahim Peak, an outlying peak of the Rainbow Mountains. During the journey other similar artifacts were found at several places.

From Kleena Kleene onward the journey was made by saddle horse and pack train ; the horses numbered ten, six being pack horses. As the party numbered six, a rota was worked by which two of us walked

for an hour then changed over to the saddle. Our journeys were about twenty miles each day, less in timber. As the horses lived off the country, feed and water for the horses determined the camp sites. That several of the party were keen anglers was an important but subsidiary factor. A ·22 rifle carried by the walkers ensured a fresh meat supply. Although game was fairly abundant and deer and moose were seen, our bag was restricted to birds, willow grouse, franklin grouse, prairie chickens, or duck. The habit of the willow grouse and the franklin grouse when flushed to fly into the trees and sit made this task very easy. The franklin grouse is appropriately nicknamed the "fool hen." Trout, too, were easy to catch; the rivers here are an angler's paradise, and rainbow trout figured frequently on the menu. A gift of fresh moose meat from an Indian family further varied a diet that was far removed from present British austerity.

Travelling the Chilcotin Road from Kleena Kleene towards Anahim Lake was at first a very dusty business. The surface is of fine silt into which horses and walkers sank at each step. McClinchy Creek has cut a deep channel into the fluvio-glacial deposits and the road is bordered by impressive bluffs. Willows and cottonwoods grow thickly in the valley, while the bluffs are crowned by lodgepole pine. After fifteen miles the road leaves the valley and climbs steeply northward to the surface of the plateau. The landscape changes, the topography is exceedingly youthful, in the sense that it has suffered little erosion since the last melt waters of the ice sheet deposited their load. For some miles there is a boulder-strewn plain, lightly timbered. Hollows in the surface are occupied by swampy meadows but there are few streams. The plateau surface drops almost imperceptibly to the Dean River which rises on the plateau a few miles to the east. The river here is a small stream meandering through a great meadow flat to Toadystone Lake, a mile or two to the north. Timbered ridges of gravel border the flat.

Here is located the single ranch on the fifty miles of road between Kleena Kleene and Anahim Lake. This ranch and two others thirty miles further on, beyond Anahim Lake, are owned by Norwegians. There are many Norwegians in this part of British Columbia, and it may be recalled that the nearest coast settlement of Bella Coola was founded by a colony of Norwegians at the end of last century.

Toadystone Ranch is typical of the Western Chilcotin (Photo. 4). The grazing grounds are the wild hay meadows along the Dean River and other isolated meadows on the plateau. There is little feed in the timber. No fodder crops are grown, but the wild hay is cut for winter feed. The cattle are Herefords; they winter out—this where the temperature may fall to −50° F. In very cold weather the cattle crowd together near the feed stacks and do not move about much. On this ranch forty sheep were introduced in the spring of 1947. On the day preceding our arrival six sheep had been killed by timber wolves and the success of the experiment was very much in doubt. Timber wolves and coyotes are on the increase—the government bounty for their destruction has recently been increased. Here

and at several other camps coyotes and wolves treated us to a nocturnal concert of yelps and howls—in daylight we only glimpsed one coyote.

One learned here much of the difficulties of ranching in this part of the world. To sell the cattle they have to be driven to Williams Lake, 200 miles, for shipment by the P.G.E. Railway to Vancouver. A nearer route to the coast has been sought for years ; the Homathko and Kliniklini routes were explored from Tatla Lake in 1892, but until the recent war little seems to have been accomplished. During the war, two large herds were driven from the Chilcotin ranches to Bella Coola and shipped in scows to Vancouver. Since the war, the ranchers have reverted to the old practice. Difficulties of feed, the high cost of tugs and scows, the effect on the cattle of the open sea passage in Queen Charlotte Sound, were among the reasons advanced as to why this route, so economical in distance, is not favoured. Construction of the road from Kleena Kleene to the Bella Coola valley would be an immense boon to these settlers and ranchers.

The Dean River in its northward course flows through a series of lakes, some of striking beauty. One of the most beautiful is Nimpo Lake (Photo. 5), a few miles north of Toadystone. Irregular in shape and fringed by pine forests, it contains several timbered islands. Bird life is exceedingly abundant, white pelicans, ospreys, and eagles being specially noteworthy.

Anahim Lake, a small settlement of perhaps six cabins, a store and post office, is sixteen miles beyond Nimpo Lake. Mail is fetched by truck from Kleena Kleene once every two weeks. The store and post office serve a scattered Indian population and the two Norwegian ranches to the north-east of the lake. South of the settlement is a great stretch of burnt over country, encumbered with windfall and with lava outcrops.

The lake, about 3600 feet, lies only a few feet below the plateau, with low sloping banks, and very large open meadows on the north side. There is no doubt that these meadows with their swampy hollows and pine-covered hillocks of drift represent a former extension of the lake. The meadows at Toadystone and Abuntlet Lake are similar in origin. The ranches already mentioned are situated on gravel kames a few feet above the meadow level. A small patch of cultivated timothy was observed at one ranch.

The trail followed lay across these meadows and northward across a stretch of burnt over country to beyond Abuntlet Lake where the Dean River was forded to the west bank. Numerous outcrops of lava characterised this stretch, the drift cover seemed almost lacking, and even more suprising, although other observers have noted this, was the absence of evidence of glaciation on the rock surfaces. The Cordilleran ice cap built up and remained largely stagnant over great parts of this interior plateau.

From the burnt over stretch a magnificent panorama of the surrounding country is obtained. The Coast Range peaks have receded to the far southern and western horizons. Abuntlet Lake is in the foreground, beyond, the pine-covered plateau extends like a great green plain to the distant mountains. To the north-west, the

COAST RANGE, BRITISH COLUMBIA

HEAD OF TOBA INLET IN FOREGROUND

TATLA LAKE RANCH

ONE EYE LAKE AND WIND GAP

TOADYSTONE RANCH

NIMPO LAKE

DEAN RIVER NORTH OF ABUNTLET LAKE

OATS ON INDIAN RANCH NEAR ABUNTLET

ESKER NEAR DEAN RIVER

GLACIAL VALLEY

Rainbow Mountains, objective of the journey, are visible for the first time, still nearly thirty miles away. Detached from the main range and rising like an island from the sea of pines is Anahim Peak, to which the Indians of old journeyed for obsidian to fashion their arrow-heads. To the north-east the plateau rises gently to another island-like mass of mountains, the Ilgachuz Range, like the Rainbows and Anahim Peak fashioned out of successive lava flows. Indeed, this whole area is a great lava field in which the dominant features are the isolated mountain masses and the great shallow depression in which the Dean River (Photo. 6) winds placidly northward for over seventy miles. This quiet stream becomes a plunging cataract in its course through the Coast Range and actually falls 2500 feet in the last forty-five miles of its course to Dean Channel.

It may be helpful here to recapitulate some of the known physiographic history of this region. The Interior Plateau was uplifted at the close of the Mesozoic era. The mid-Tertiary period was one of intense volcanic activity. Many of the volcanic vents were at the inner base of the Coast Range in this area. There was also folding and faulting affecting both sediments and lavas. Approaching the end of the Tertiary period there was another general uplift of the area. The streams were rejuvenated and the mid-Tertiary volcanic accumulations were deeply dissected before the oncoming of the Ice Age.

The Rainbow Mountains, Anahim Peak, and the Ilgachuz Mountains are relict mountains whose summit levels may nearly approach the mid-Tertiary plateau surface. The wide depression in which the Dean River flows must be very near the pre-glacial surface, possibly the valley of a pre-glacial river which drained northward towards the Nechako until its waters were captured in post-glacial times by the headward erosion of the Dean through the Coast Range, a process perhaps hastened by glacial erosion.

The Dean River emerges from Abuntlet Lake as a considerable stream about 150 feet wide, fringed with water-lily beds and literally teeming with rainbow trout. On both sides of the river are wild hay meadows. Here is a very remarkable ranch, the last settlement for many tens of miles. It is owned and operated by an Indian family. Bulletin No. 34 of the British Columbia Bureau of Provincial Information has this sentence : "An Indian near Abuntlet Lake winters about 200 horses on the adjacent range." This is sadly out of date. Most of the horses gave place to a herd of Hereford cattle. The sale of some of these provided for the purchase in 1947 of an up-to-date American tractor, the driving of which to the ranch must have been a major adventure. In August haying was nearly complete. The tractor driven by the Indian pulled a curious low bogie mounted on sleigh runners on to which his women folk forked the hay for conveyance to the stacks. The Indian estimated that they had secured about 400 tons of hay for winter feed. Several acres of meadow had been cultivated and were growing a very heavy crop of oats (Photo. 7). This would not be allowed to ripen but would be cut green. The ranch buildings, corrals, and fences were very impressive and compared favourably with any seen. A moose had been shot; the meat was

being prepared for smoking; the gift of a large piece made a very welcome addition to the menu.

The Indian rancher proved a fund of information regarding the best approach to the mountains. His estimate of one-and-a-half days' riding to reach timberline proved exactly right. Leaving the meadows we headed north-west through fairly thick timber on a surface of glacial outwash. In the army exercise a bulldozer crew had blazed a trail for some miles in this direction. This trail was followed for a time, but with its many tree stumps and windfalls proved worse than the timber. A large blaze on a pine bore the inscription, "The Mackenzie King Highway completed to this point, March 1945," followed by the signatures of the bulldozer crew. The top of an esker (Photo. 8) provided a fine trail for about six miles. A creek followed the sinuous hollow to one side almost exactly while the similar hollow on the other side was dry. Camp was made at the edge of a very large meadow—at an altitude of about 4200 feet—with a small lake remnant occupying the centre. A timbered esker ridge crossed part of the meadow flat. To the south an isolated peak of tilted sediments rose to over 6000 feet.

Next day the going was very rough, heavy timber with many windfalls, frequent swampy meadows, outcrops of lava and belts of moraine. Numerous deep hollows in the boulders of the moraines showed a water level indicating that they contained ponds in spring although now dry. At about 6500 feet timberline was reached, and the tops of the range, mantled in greenish scree with patches of snow, seemed very close. To find feed for the horses necessitated a descent of several hundred feet to a small meadow with a pond and stream.

On the ascent the change in the vegetation became very noticeable —the lodgepole pine and engelmann spruce of the lower levels gave place gradually to white bark pine, alpine fir, and dwarf junipers. Even so late in the summer the alpine meadows were gay with wild flowers, the red Indian Paint Brush being very conspicuous. Traces of moose, deer, and bear were plentiful and several moose were seen.

At and just below timberline the exposed lava surfaces showed signs of intense glaciation, with striations indicating a W-E movement of the ice. Above timberline on the southern slope of the range the surface is mostly mantled with scree of recent origin. The only plants noted on the screes were patches of Saxifrage.

Ascent to the crest above the camp brought a great surprise—the existence of a great glacial through valley passing transversely through the range from north-west to south-east (Photo. 9). There is no hint of this on the maps we had, and our direction of approach gave no indication of its existence. The north-facing wall contains a series of cirques, some containing small tarns. The opposite wall rises steeply with no cirques. The valley bottom is about 6000 feet and contains no stream. There is light timber on the bottom and part way up the sides. In its magnitude this valley strangely resembles the Larig Ghru of the Scottish Cairngorms. The dip of the lava flows showed it to be eroded in the crest of a great anticlinal fold.

The Indians named these mountains the 'Tsitsutl' or 'painted

mountains.' Seeing this valley provided the reason, great screes and rock slides, some of the brightest vermilion, some dull red, others orange, furnished brilliant slashes on the otherwise grey-green valley walls. The vermilion of one slide was the brightest rock colour any of us had ever seen.

Leaving the valley behind, the ascent to the summit of Tsitsutl Peak, 8250 feet, was completed. From this view-point the magnificence of the Coast Range could be appreciated. Although there was a complete cover of high cloud, it lay above the highest peaks, and under the cloud visibility was perfect. At least eighty miles of the range could be seen, the glaciers and ice fields around Mount Waddington were clear although we could not be sure of the mountain itself; especially prominent were the great peaks, Stupendous Mountain and its neighbours to the south of the Bella Coola River. To the south-east stretched the immensities of the Chilcotin Plateau with Anahim Lake and its meadows in the middle distance. Nearer, lay our route of approach from the Dean River. From this height the pattern of the glacial deposits left by the glacier which had fashioned the through valley could be read like a text-book diagram—the concentric pattern of the moraines, the esker ridges, and the pitted outwash, all stood out clearly despite the vegetation.

With keen interest we turned our eyes to the west and south-west. There was historic interest in this view. A few miles away in this direction lay Mackenzie's route to the Pacific in 1793. Below us at about 5000 feet lay a rolling plateau with numerous lava outcrops, some highly tinted. Lakes and alpine pastures dotted the view. Mackenzie Peak we could not be quite sure of, but the notch of Burnt Bridge Creek which the explorer followed to reach the Bella Coola River was easily identified.

The cloud base began to obscure the mountains, a bitter wind and blowing rain forced us down into camp. On the following day my companions had all the information they were seeking and the return journey began.

THE COASTLINE OF ENGLAND AND WALES

Review by Professor David L. Linton, M.Sc.

Our islands are richly endowed in the matter of coastal scenery, and we Britons have long regarded that endowment with pride and affection. Admittedly the affection leads us to build Blackpools and Peacehavens for its expression, and the pride cannot prevent the disfigurement, not merely of what nature made beautiful, but even of what we have supplied with the apparatus of organised enjoyment, as at Portobello and Penmaenmawr. Yet the pride and the affection are indeed there, and any book such as this [1] which deals comprehensively with so large a portion of our scenic heritage as the Coastline of England and Wales is deserving of attention by every one of us. It is an inventory of the rich and varied assemblage of features that make up some 2700-odd miles of coast. And as such it is welcomed by Professor Stamp and Sir Patrick Abercrombie, the authors of the two introductory notes with which the book is furnished. To them it is the survey that must precede planning. Perhaps they are right. Mr. Steers' purpose, however, is evidently quite other. Apart from occasional passages (sometimes tracty and sorting ill with the rest of the

text) which depict those scenes where only the handiwork of man is vile, the main portion of this book is an essay in regional morphology—the explanatory description of the English and Welsh coasts in terms of the rock structures involved, the processes of erosion and deposition that are or have been at work, and the ascertainable historical changes in the littoral zone both inland and offshore. This occupies Chapters IV to XI and some 404 out of the 548 text pages. To introduce and round off the account half-a-dozen general chapters are added.

One of these, since the description throughout leans rather heavily on geological support, is necessarily a summary account of the geological history and regional geology of the country. This is competently done, though like all such summaries it will be most difficult for precisely those readers who most need its helpful guidance, and it contains a few statements that stand in need of correction. Quaternary and Holocene are not synonymous terms (p. 12) ; the Forest of Bowland is not, as a whole, anticlinal (p. 25) ; the main chalk escarpment is not " breached by many water gaps " (p. 29) ; and it is not true to say of the Jurassic scarplands, or usually of any others, that " when the dip is very slight they are scarcely important elements in the scenery " (p. 27). This chapter is followed immediately by an appendix of some half-dozen pages to ease the way for readers whose familiarity with the detailed nomenclature of the British stratigraphical succession is slight. This is certainly helpful, though the reviewer believes it would be even more so if the main table, like the summary table on page 39, were arranged in consistently descending sequence, and if the arbitrary numeration of systems (*e.g.* Rhaetic 9, Tertiary 12) were replaced by the systematic sequence of formation letters and numbers used by the Geological Survey.

The second general chapter is an excellent summary of our knowledge of the physical processes which shape our shorelines. The nature of waves and their relation to fetch are pithily summarised, and one notes with pleasure an appreciative account of Lewis's work on constructive and destructive waves—in the reviewer's view the most original contribution made to this part of the subject in our generation. Beach-drifting is clearly treated, and though tidal currents are admitted to have limited powers of transportation, Steers insists categorically, and no doubt rightly, that they can have no part nor lot in the creation of features like Dungeness which earlier workers ascribed to them. In another respect, however, Steers appears to under-emphasise the importance of transport by tidal currents. A quotation (on p. 70) from the findings of the Royal Commission of 1911 on Coast Erosion attributes gain of land " not so much to the agency of the sea as to the deposition of sediment brought down by rivers from their drainage areas." This statement, which is more than questionable, passes without comment from Steers, and tidal deposition, stressed a generation ago by Douglas Johnson, here goes undiscussed, though its importance is clearly recognised in a later page (p. 346).

The other general chapters—on Recent Vertical Movements of Shoreline, on Dunes, and on Salt Marshes—follow the regional descriptions, though the reviewer found it worth while to reverse this order and so benefit to the full from Mr. Steers' special and authoritative knowledge of the two latter subjects, and it is probably true that other readers would benefit in equal measure if the general discussion of vertical movements preceded the particular.

It is pertinent at this point to say that Mr. Steers allows himself one or two inaccuracies or ambiguities of expression when dealing with such movements. Because it is usually difficult, and sometimes impossible, to say whether land or sea was the active agent in any particular instance in which relative movement has occurred, Suess employed the non-committal but precise usage which speaks of *positive* and *negative* movements of the strandline, a usage that might well have saved Mr. Steers some trouble. He would, for example, have avoided the unprovable assertion of a " downward movement of the land in post-glacial times " (p. 119), or the statement that when the alluvia of Southampton Water began to form " the land stood at least 40 feet higher than now " (p. 295). A related difficulty appears in his use of the terms submerged and emerged. He finds it " difficult to regard much of the Welsh coast as merely either submerged or emerged " (p. 183), and elsewhere suggests that Johnson's classification of shorelines as due to submergence, emergence, etc. is " perhaps more usefully applied to bigger areas than England and Wales or even all of Great Britain " (p. 9). The reviewer believes that the difficulty

here encountered is unreal and could be avoided by recalling Johnson's distinction between shoreline and coastline and remembering that his classification applied to the former. The shoreline is an instantaneous actuality which is made anew by every positive or negative movement : a coastline may survive many such changes. A cosmic event which to-morrow evaporated twenty feet of water from all our oceans would thereby convert all existing shorelines into abandoned strandlines, and bring into existence a new set which would be everywhere shorelines of emergence. But most of the world's coastlines would remain much as they are now, and over wide areas their predominant characteristics would still reflect past drowning of landscapes due to greater or less degrees of normal or glacial dissection.

It is, however, the regional descriptions that form the vital core of the book—some eight chapters dealing, respectively, with the English shores of the Irish Sea, the shores of Wales, the Severn estuary, the south-west peninsula, the Channel coast and straits, East Anglia and the Thames estuary, the Humber and Wash, and the coast of the north-eastern counties. As Mr. Steers says, opinions may differ as to the number and location of the best limiting points for any system of coastal regions, but, save that Chapter IX would like to proceed simultaneously in two opposite directions from Sheringham, his divisions seem to justify themselves in practice. Mr. Steers' chapters run in anti-clockwise sequence from the Solway to Berwick-on-Tweed, but the description of the east coast within each of Chapters IX, X and XI runs clockwise, from north to south. This produces discontinuity and an appearance of disorder, and it would be a gain to the reader if Chapters IX and XI were interchanged and continuity from Tweed to Thanet restored.

These regional descriptions are illustrated by a large number of outline maps in the text and a series of 115 handsome plates—mostly half-page—gathered together at the end of the book. This " pictorial atlas of the coast " would enhance any book on the subject and is fascinating to geomorphologist and layman alike. Whether the advantages of synoptic presentation outweigh the disadvantages of divorce from the text is, however, doubtful, and the disadvantages are increased by the fact that though each photograph has a short title its fuller explanation is found neither with it nor usually in the text, but in a third place between pages 548 and 555. Some of the plates, moreover, deserve fuller and much more specific explanation than they receive.

As has been hinted already, geology enters very largely into these regional chapters, and it would not, perhaps, be unfair to say that the guiding principle in the descriptions of the upland coasts of the south, west and north-east is to be found largely in the search for relationships between coastal form and feature and geological structure. Yet many a reader will be disappointed that this search does not yield more positive results. On the one hand, he will too often search in vain for the explanation of the small-scale features that catch the eye of the observant holiday maker, and, on the other, he will miss the satisfaction of seeing the larger features of coastal outline drop into place in an ordered structural pattern. True, Mr. Steers may well reply to this, that he could not attempt either task, and still less both, within the compass of one book and one lifetime. Yet it is tantalising to be led, for example, into Cemmaes Bay on the Anglesey coast and told that eleven different geological formations crop out in it, but be told also nothing of their varied influence on the bay outline or cliff form and colour, including the interesting solution forms assumed by the limestones. Surely it is at this scale that the relations of geology and coastal form are most fruitfully sought and most readily apprehended by the non-specialist ?

When he turns to relationships of a larger order, embracing wide coastal sweeps, Mr. Steers is ever careful not to claim more than the geological facts warrant, but by doing so he misses half the possible point. " This brief and cursory survey of the rocks adjacent to the coast between Berwick and Sewerby " he says on p. 449 " will at least have shown that they are great in number and type." Or again on p. 114 : " From this brief description . . . [of three pages] . . . it will be clear that in North Wales there is no close relationship between tectonic structure and the coast." Rocks and tectonic structure, however, are only half the story. If we employ the Davisian method and regard present coastal forms as the result of particular processes acting for some given time on some previously existing rock mass, we have to note two things. First, that the rock mass possesses an initial form as well as structure, and

second, that that form is progressively changed by rain and rivers, or what you will, what time the sea-coast eats its way into it from the side. Coastal outline at any given moment will reflect both the surface form and internal structure of the mass being devoured by the waves. The Seven Sisters of Sussex offer a shining example of the dependence of cliff height, not on rock hardness, but on pre-existing hill and valley form, and the south-west of Ireland presents some spectacular examples of bold cliffs developed on resistant rocks because the latter, and only the latter, still build bold uplands in that area of heavy rainfall and advanced dissection. In a word, the influence of rocks and structure on the general run of the coastline is as likely, or even more likely, to be indirect than direct. Hard rocks will build promontories because they have already determined ridges or watersheds : elsewhere, other ridges and watersheds of softer rocks may nevertheless give rise to coastal headlands. This point was clearly appreciated by Arber in his studies of the coastal scenery of North Devon, and Arber's views are quoted by Mr. Steers, though he feels bound to limit his acceptance by a footnote on page 67.

A related but not identical point is that present-day cliff features are not always wholly, or in some cases not even partly, of marine origin. Mr. Steers rightly insists on this at several points, though he sometimes leaves the reader wondering what were the alternative means by which the features in question were formed. His strict scientific caution prevents him, for example, suggesting that erosion by ice may be responsible for the bluff overlooking Morfa Harlech (p. 137).

There is another aspect of the relations of geological structure and coastal outline that is hardly touched on in this book—namely, the problem posed by the ordinary larger atlas map of Britain : Why is the coast of England and Wales the shape it is ? This question, natural enough to the layman, is, of course, not one that is asked in polite geomorphological circles : it has too much of that quality of innocent unanswerability which attaches to childish questionings about God. None the less, the question is real, and not wholly impracticable or unprofitable, and some will perhaps share the reviewer's disappointment that Mr. Steers, who knows more of the answer than the rest of us, did not feel so large a view within the scope of his book. On the whole he avoids large views, though one exception, which is greatly to the profit of his exposition, comes readily to mind. It is that in which he says that the Norfolk Coast " acts as a great groyne so that material from Lincolnshire and further north, to say nothing of that raised from the shallow floor of the sea, becomes banked up against the coast." And in the same way he avoids long historical perspectives, especially, of course, those that look speculatively into the future. By so doing he fails to convey the sense of the present aspect of the coast as an instantaneous phase in an evolutionary process, a transformation from something we can reconstruct to something whose emergent outlines we already begin to perceive. Thus his treatment of the Irish Sea coast of Northern England loses greatly by giving no hint of its essential simplicity. We are told (p. 84) that " the type of coast changes greatly at the Duddon estuary." To accept this as the whole story, however, is to ignore the essential unity of Walney Island with the whole coastline from Duddon Sands to St. Bees Head. Taken as a unit, here is a rectilinear stretch of coast of almost 40 miles, partly cliffed and partly built, which is approaching coastal maturity, though still some way from it, under the influence, no doubt, of the dominant waves reaching it through the sea-gateway which it fronts directly between Anglesey and the Isle of Man. True, it is breached by the Duddon Estuary, but the latter is not the analogue of those of the Leven or Kent, but rather of the smaller breach of the Esk at Ravenglass and of the larger one of Morecambe between Walney and Fleetwood. Again, the Lancashire shore from Fleetwood to Formby, as is emphasised by the north-south low-tide shoreline, is another evolving unit almost 30 miles long and fronting the dominant waves which reach it through the same sea-gateway, but this time from due westwards. To complete this story, a third stretch of coastline runs 25 miles WSW from Wallasey to Abergele and fronts the dominant waves that reach it from the NNW through the 30-mile gap between St. Bees Head and the Point of Ayre. It will probably be conceded that from even this summary statement the shape of things to come is more than implicit in what now is, and that as long as Mona and Man remain the course of evolution will be to perfect what is already well begun.

One other general point may perhaps be not unfairly made, though it is to some extent controversial. It concerns the extent to which glacial processes must be

invoked in explaining coastal forms. The author takes a cautious attitude, as is on the whole proper to such a work. Yet the reviewer suggests that in some cases at least the discussion might have gained by consideration of ice-work as an additional possibility. A minor case has already been mentioned (the cliffs overlooking Morfa Harlech) ; a more important one concerns the drift-filled valleys of the Furness area (p. 85). At the Park Mine the record of 537 feet of " drift " (reduced in a footnote to not more than 300 feet) is held to imply a normally eroded valley cut at least 450 feet below present sea-level and filled with drift. This leads to the inference that at the time such valleys were cut " the Isle of Man may have been joined to the mainland with St. George's Channel as dry land." These are large conclusions to base on so slender a foundation. In an area where heavy glacial erosion may be expected, the alternative hypothesis of troughs locally gouged 300 feet below sea-level by ice seems deserving of attention. Its acceptance would give Marr's belief that pre-glacial sea-level was not much removed from present sea-level, a significance different to that which Mr. Steers attaches to it. A still more important case is that offered by the Fenlands, which are described as a " great gulf eroded out of the Jurassic clays " and subsequently occupied by ice (p. 31). It is implied that this gulf, elsewhere (p. 439) called a shallow basin, resulted from erosion by the sea, though shallow basins are not a normal result of wave attack. The alternative hypothesis that the Fenland basin has arisen by glacial erosion in a region of ice convergence seems to offer certain definite advantages and merits serious attention.

It is, moreover, not only the direct erosive work of ice that may require consideration in elucidating our coastal forms. The channels produced by meltwater moving along or in relation to an ice-margin are by no means unimportant. Mr. Steers is not unaware of this, and mentions Charlesworth's views as to the features of the North Pembrokeshire coast, quotes Greenly on the origin of the Menai Straits, and the Officers of the Geological Survey on the Bank End Channel behind Maryport in Cumberland. But his application of the principle of glacial diversion of drainage is local only. His account of Menai Straits, for example, involves the damming of an eastward-flowing stream (Gaerwen) by an " Ogwen Glacier " issuing from the Nant Ffrancon valley. This is not impossible, but would do nothing to explain the earlier spillway of Ceint that doubtless carried water and outwash from a proglacial lake at Red Wharf Bay to the Malldraeth marshes along a line which parallels the Menai Straits and is four or five miles further north-west. Clearly, Irish sea ice must be invoked, and, once that has been done, many phenomena from Fishguard to the Solway are open to a single and consistent explanation. The necessity for the piecemeal hypotheses framed to deal with the great Whitehaven–St. Bees spillway and sundry smaller channels in Cumbria and Wales at once vanishes, and the possibility exists that meltwater drainage may have been responsible for the insulation of the glacial deposits of Walney Island and the low-level channels that lead across the drifts of the Fylde.

So much insistence on what Mr. Steers' book does not do, however, quite fails to do it justice. To ask all that has been suggested is, of course, to ask too much. To present the English coastline in a single all-embracing evolutionary perspective is a task beyond our times, but Mr. Steers has brought it appreciably nearer. Here we have for the first time in a single volume virtually all that is known about our coasts. Much is, of course, gleaned from the writings of others, but much is the fruit of Mr. Steers' own observation, and his unrivalled experience illumines much more. He confesses himself that he has found it easier to write about flat coasts than cliffed coasts, and the best sections of the book are those in which the scenes of his own most intensive and devoted labours come up for review. But open this book where you will, be you geomorphologist, geologist or historian, and you will learn much about that stretch of coastline most familiar to you. And that is surely the mark of a very considerable achievement.

[1] *The Coastline of England and Wales*. By J. A. Steers. Introductory notes by L. Dudley Stamp and Sir Patrick Abercrombie. $9\frac{1}{2}\times6\frac{1}{2}$. Pp. xxix + 644. 114 figs. 115 photographs. 2 plates in colour. Cambridge : University Press, 1946. 42*s*.

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EDWARD BRANSFIELD'S ANTARCTIC VOYAGE, 1819-20, AND THE DISCOVERY OF THE ANTARCTIC CONTINENT. *The Polar Record*, 1946 (1947), 4 (*32*) : 385-393.

Reproduction of an account of Bransfield's voyage, originally published in *The Literary Gazette and Journal of Belles Lettres*, London, in 1821.

REPORTS ON SCIENTIFIC RESULTS OF THE UNITED STATES ANTARCTIC SERVICE EXPEDITION, 1939-1941 : A REVIEW. By F. Debenham. *Geographical Review*, 1946, 36 (*3*) : 483-485.

OUR NAVY EXPLORES ANTARCTICA. By Rear-Admiral R. E. Byrd, U.S.N. *National Geographic Magazine*, 1947, 92 (*4*) : 429-522. 70 photographs. 4 maps.

Account of the 1946-47 U.S. Navy Antarctic Expedition, officially designated Operation Highjump.

SCIENTIFIC EXPEDITION TO THE ANTARCTIC WHALING GROUNDS, 1946-47. By R. A. M. Case. *Nature*, 1947, 159 (*4029*) : 88.

THE FALKLAND ISLANDS DEPENDENCIES SURVEY, 1943-46. By J. M. Wordie. *The Polar Record*, 1946 (1947), 4 (*32*) : 372-384. 8 photographs. Map.

THE FALKLAND ISLANDS DEPENDENCIES SURVEY, 1946-47. By E. W. Bingham. *Polar Record*, 1947, 5 (*33-34*) : 27-39. Map.

RECENT BRITISH ACTIVITY IN THE ANTARCTIC. By E. W. Bingham. *United Empire*, 1948, 39 (*1*) : 31-35.

ARGENTINE EXPEDITION TO THE ANTARCTIC. *Bulletin of the Pan American Union*, 1947, 81 (*5-6*) : 345-346.

The Argentine vessel *Patagonia* left Buenos Aires in January 1947 in order to refuel the world's most southerly lighthouse (built in 1942) on one of the Melchior Islands in Gerlache Strait, to conduct oceanographical studies, and to locate a suitable site for a permanent meteorological observatory in the Antarctic similar to that operated by Argentina for the last forty-two years in the South Orkney Islands.

POLITICAL CLAIMS IN THE ANTARCTIC. By R. N. Rudmose Brown. *World Affairs*, October 1947 : 393-401.

ARGENTINE AND CHILEAN TERRITORIAL CLAIMS IN THE ANTARCTIC. *The Polar Record*, 1946 (1947), 4 (*32*) : 412-417. Map.

CONTEMPORARY INTERNATIONAL INTEREST IN THE ANTARCTIC. By W. L. S. Fleming. *International Affairs*, 1947, 23 (*4*) : 546-557. Map showing territorial claims.

OCEANOGRAPHY

EXPLORING THE DEEP SEA. By F. D. Ommanney. *Geographical Magazine*, 1947, 19 (*12*) : 513-522 : 20 (*4*) : 152-160. 23 illustrations.

A SUBMERGED ANCIENT CLIFF NEAR PLYMOUTH. By L. H. N. Cooper. *Nature*, 1948, 161 (*4086*) : 280. 1 fig.

A submarine cliff, suggesting an ancient shore line, has been recorded by echo soundings about two miles SSW magnetic from Plymouth Breakwater Lighthouse.

SUBMARINE PHOTOGRAPHY OFF THE CALIFORNIAN COAST. By F. P. Shepard and K. O. Emery. *Journal of Geology*, 1946, 54 (*5*) : 306-321. 30 figs.

Photographs taken with the submarine camera designed by Maurice Ewing provide information on the appearance of the sea bottom on the continental shelf, banks, and on the walls of submarine canyons on the area between Santa Rosa Island and Lower California.

NEWLY DISCOVERED SUBMARINE CANYONS OF NEW GUINEA AND SOUTH AUSTRALIA. By R. C. Sprigg. *Nature*, 1948, 161 (*4085*) : 246-247.

THE SWEDISH DEEP-SEA EXPEDITION. By F. B. Phleger, Jr. *Science*, 1947, 106 (*2755*) : 366.

THE SWEDISH DEEP-SEA EXPEDITION. By H. Pettersson. *Nature*, 1947, 160 (*4069*) : 559-560.

A brief report on the continuous records of the depth of the Atlantic on the voyage of the motor-schooner *Albatross* (1400 tons), which left Göteborg on July 4, 1947. Professor Pettersson states that " older views of the deep-sea bottom as a smooth, perfectly level surface are radically wrong . . . the depth curve moves incessantly up or down, generally by gentle undulations but quite often rising or falling by distinct steps." Cores taken by means of Dr. B. Kullenberg's piston core-sampler tend to show that the lower layers of a core 15 metres long were deposited before the end of the Tertiary Age. Cf. *S.G.M.*, 1947, 63 (*2*) : 84.

THE SWEDISH DEEP SEA EXPEDITION. By H. Pettersson. *Ymer*, 1947, 67 (*3*) : 227-234. Sketch map.

Outline of the results of the *Albatross* expedition, which reached Honolulu on November 28, 1947, after visiting the Galapagos Islands.

BIOGEOGRAPHY

A GEOGRAPHICAL SYSTEM OF VEGETATION. By A. W. Küchler. *Geographical Review*, 1947, 37 (*2*) : 233-240.

Inspired by Köppen's classification of climatic types, the author suggests an analogous system of symbols for classifying and mapping vegetation. Capital letters designate basic groups—*e.g.*, B : broadleaf evergreen woody vegetation ; N : deciduous needleleaf ; G : grassland and other herbaceous plants. Qualifications are designated with small letters. Thus, an area thinly covered with sagebrush is shown by the formula Bzi, z meaning dwarf shrubs, and i being the symbol for trees and shrubs standing far apart. Considerable detail can be shown, and the author claims that one of the advantages of his system is its adaptability to maps on a wide variety of scales.

EARLY RELATIONS OF MAN TO PLANTS. By C. O. Sauer. *Geographical Review*, 1947, 37 (*1*) : 1-25. 1 fig.

PLANT DISTRIBUTION IN THE NORTHERN HEMISPHERE. By F. C. Stern. *Geographical Journal*, 1946, 108 (*1-3*) : 24-34. 2 figs. 4 photographs. Discussion : 34-40.

ARCTIC AEROBIOLOGY. By N. Polunin, S. M. Pady, and C. D. Kelly. *Nature*, 1947, 160 (*4077*) : 876-877. Sketch map.

Exposure of nutrient Petri plates on R.C.A.F. flights at altitudes of 4000-5000 ft. over arctic Canada showed that fungi and bacteria were abundantly and diversely represented in the atmosphere. A plate exposed over the sea-ice of M'Clintock Channel, for instance, showed 7 colonies of fungi and 95 of bacteria.

THE FLORA OF NOVA SCOTIA. By A. E. Roland. *Proceedings of the Nova Scotian Institute of Science* (1944-1946), 1947, 21 (*3-4*) : 1-642. 127 figs. 477 dot maps. Bibliography, glossary, and index.

The vascular plants of Nova Scotia comprise a total of 1323 species and 255 varieties. The author provides a list of the native and introduced plants growing without cultivation (except grasses, treated in a previous publication), and also discusses the physical background and historical aspects. The ranges of the various species are shown on numerous small maps.

GEOGRAPHIC RANGE AND INTERNAL DISTRIBUTION OF THE MOSSES INDIGENOUS TO NEW ZEALAND. By W. Martin. *Transactions of the Royal Society of New Zealand*, 1946, 76 (*2*) : 162-184. 94 references.

The distribution of 493 species and 51 varieties of mosses in the 16 botanical districts of New Zealand is tabulated, also the external distribution.

ERYTHREAN FISHES ON THE MEDITERRANEAN COAST OF PALESTINE. By G. Haas and H. Steinitz. *Nature*, 1947, 160 (*4053*) : 28.

Record of ten species of fishes which have traversed the Suez Canal and are now found in the eastern Mediterranean.

CARTOGRAPHY

THE EQUIDISTANT AZIMUTHAL PROJECTION OF THE SPHERE. By L. P. Lee. *New Zealand Geographer*, 1947, 3 (*1*) : 41-58. 6 figs.

HYPERBOLIC NAVIGATIONAL CHARTS. By N. Pye. *Memoirs and Proceedings of the Manchester Literary and Philosophical Society*, 1946-47, 88 : (Reprint) 16 pp. 4 figs.

AIR SURVEY : THE MODERN ASPECT. By C. A. Hart. *Geographical Journal*, 1947, 108 (*4-6*) : 179-197. 11 figs. 2 plates. Discussion : pp. 197-198.

EARLY SCOTTISH MAPS AND TRAVEL. By D. G. Moir. $9\frac{1}{2}\times6$. Pp. 8. Edinburgh : R.S.G.S., 1947. 6*d.*

A short account prepared on the occasion of the Society's Exhibition, August-September 1947, dealing with Roman Scotland, the middle ages, the sixteenth-century developments in cartography, seventeenth-century travellers, early topographical surveys, the military roads, road maps and coaching, eighteenth-century travellers, and the Scotland of Sir Walter Scott.

GENERAL

A GEOGRAPHIC CLASSIFICATION OF GEOGRAPHY MATERIAL AS BASED UPON THE DEWEY CLASSIFICATION SYSTEM. By A. H. Meyer. *Annals of the Association of American Geographers*, 1947, 37 (*4*) : 209-222. 2 charts.

THE GEOGRAPHER'S CONTRIBUTION TO METEOROLOGY. By Gordon Manley. *Quarterly Journal of the Royal Meteorological Society*, 1947, 73 (*315-316*) : 1-10.

THE HISTORY AND STATUS OF THE INTERNATIONAL METEOROLOGICAL ORGANIZATION (I.M.O.). By I. R. Tannehill. *Bulletin of the American Meteorological Society*, 1947, 28 (*5*) : 207-219.

THE RADIATIONS FROM THE EARTH'S ATMOSPHERE. By S. Chapman and D. R. Bates. *Nature*, 1947, 160 (*4060*) : 250-251.

A review of recent research on luminescence of the night sky, with special reference to papers read at the international conference on Emission Spectra of the Night Sky and Auroras, held in London, July 7-10, 1947.

THE CONSTRUCTION OF A GEOLOGICAL TIME-SCALE. By A. Holmes. *Transactions of the Geological Society of Glasgow* (1945-1946), 1947, 21 (*1*) : 117-152. 5 figs. Bibliography.

FACTS AND FANCIES IN GEONOMY. By H. A. S. Smith. *Bulletin of the Ceylon Geographical Society*, 1947, 2 (*2*) : 45-55. 1 fig.

THE ORIGIN OF FORCES RESPONSIBLE FOR DISRUPTION OF CONTINENTS, MOUNTAIN BUILDING AND CONTINENTAL DRIFT : ORIGIN AND PERMANENCE OF OCEAN BASINS AND DISTRIBUTION OF LAND AND SEA. By H. L. Chhibber. *Bulletin of National Geographical Society of India*, 1947, No. 5 : 1-11.

CATALOGUE OF THE ACTIVE VOLCANOES OF THE WORLD. By W. Q. Kennedy and J. E. Richey. *Bulletin volcanologique*, 1946, Ser. 2, 7 (Suppl.) : 1-11. Map.

476 active volcanoes are listed and mapped.

GLACIOLOGICAL RESEARCH. By G. Seligman. *Nature*, 1947, 160 (*4054*) : 66-67.

METHOD OF MEASURING STREAM DENSITY. By T. Wilgat. *Annales Universitatis Mariae Curie-Sklodowska*, Lublin, 1947, 2B : 163-177. 24 figs. French summary : 178-184. 9 references.

EMPIRICAL MATHEMATICAL RULES CONCERNING THE DISTRIBUTION AND EQUILIBRIUM OF POPULATION. By J. Q. Stewart. *Geographical Review*, 1947, 37 (*3*) : 461-485. 15 figs.

THE POPULATION PROSPECT IN RELATION TO THE WORLD'S AGRICULTURAL RESOURCES. By O. E. Baker. *Journal of Geography*, 1947, 46 (*6*) : 203-220. 6 figs.

GEOGRAPHICAL SCIENCE IN EDUCATION. By S. W. Wooldridge. *Geographical Journal*, 1947, 109 (*4-6*) : 198-206. Discussion : 206-207.

FIFTY YEARS OF *THE JOURNAL OF GEOGRAPHY*. By R. M. Brown. *Journal of Geography*, 1947, 46 (*1*) : 3-8.

GEOGRAPHY IN WAR AND PEACE. By E. G. R. Taylor. *The Advancement of Science*, 1947, 4 (*15*). *Geographical Review*, 1948, 38 (*1*) : 132-141.

See *S.G.M.*, 1947, 63 (*3*) : 97-108.

GEOGRAPHY AND PLANNING. By G. H. J. Daysh and A. C. O'Dell. *Geographical Journal*, 1947, 109 (*1-3*) : 103-106.

INDICATEUR CHAIX MONDIAL. 10×8. Pp. 380. Maps. Paris : Librairie Chaix, January 1948. 300 *fr.*

An international traveller's guide, giving time-tables of services by rail, air, and sea throughout the world, with maps showing the principal connections. Air ports, air and steamship lines, travel and shipping agencies are listed, and much other information is provided. The *Indicateur* will be issued every second month.

REVIEWS OF BOOKS

EUROPE

The Decline of the Roman Empire in the West. By F. W. Walbank. 7½×5. Pp. xiii+97. 13 plates. Sketch map of the Roman Empire at the time of Trajan. Past and Present, Vol. 3. London : Cobbett Press Ltd., 1946. 7*s* 6*d*.

When the foundations of western civilisation are being shaken, a study of a previous one which decayed and disintegrated is very relevant. The main theme of this book is an attempt to answer the question " Why did the Roman Empire decay ? " Professor Walbank briefly surveys some previous answers, most of which, in the light of modern research, he finds inadequate, particularly those emphasising either chance or external causes, *e.g.* change of climate. He finds the seeds of decay within the system—slavery, the stagnation of technique, the shallowness of the home market, the need for extending markets, political disunity. The question naturally arises " Will our civilisation follow suit ? " Gibbon answered this with a categorical No. Prof. Walbank also says no, but with much less conviction. His ' no,' however, is largely based on the contrast of developing technique and communications. Had he stressed some of the similarities rather than these outstanding differences, his ' no ' might have been even less certain.

Stimulating and thought-provoking, clearly and concisely written, with a useful note on relevant books, this study fulfils the purpose of the Past and Present Series of showing how history helps. S. C. F.

Trees in Britain and their Timbers. By Alexander L. Howard. 8½×5½. Pp. xii+340. Drawings by Margaret Delisle Burns. 87 plates. London : Country Life Ltd., 1947. 25*s*.

This is a rather bookish book about trees, indigenous and introduced, grown in Britain. The preface states : " This is not a botanical work, and the families to which the trees belong are not mentioned." The book is, therefore, not for the specialist, but for the tree-lover. Its admirable photographs will evoke much pleasure, and the drawings help in the recognition of leaf, flower, and fruit.

The bibliography contains references to authors from Pliny the Elder to Archdeacon Lonsdale Ragg, D.D., some quotations being of considerable length. From one so addicted to literary references as the writer of this book one might have expected a few more, such as to the lovely Scots song " O Rowan Tree," and to Kipling's story about the monkey-puzzle—the author of the book under review says nothing as to how, where, and when that name was applied to that tree. By the bye, is it correct to say (p. 159) of the mistletoe that " unlike most parasites to be virtually harmless to the growth and development of the trees on which it grows, except perhaps in the case of orchards " ? No mention is made of the great variation in coloration and spininess of the holly leaf, indicating many varieties. But these are minor matters. The book is like a talkative, erudite landowner showing you over his park. W. B.

Your Holiday in Britain. By Gordon Cooper. Foreword by Lord Hacking, P.C., O.B.E., D.L. 7½×5. Pp. xiv+194. 64 plates. London : Sampson Low, Marston and Co. Ltd., N.D. 12*s* 6*d*.

Being " a collection of practical suggestions to help you spend a perfect holiday in the British Isles, whatever your taste," this book supplies the answer to the question of " where shall we holiday ? " It gives valuable advice in planning the route and choosing centres from which tours of interesting areas can be made. It lacks the detail of local guide books, but general series of guide books are listed. Whether one is inclined to go camping or yachting, to play golf or shinty, or to visit areas territorially linked with famous names, or indulge in less orthodox ways of spending a holiday, suggestions and items of information are given, including the addresses of organisations helpful in planning or in enhancing the interest of a holiday. For a foreign tourist who wishes to cover Britain's beauty spots in short time, this book would be very helpful. J. R. M.

The Scot in History: A Study of the Interplay of Character and History. By WALLACE NOTESTEIN. 8×5½. Pp. xvii+371. London: Jonathan Cape Ltd., 1947. 16*s*.

The far-reaching implications of Professor Notestein's title tends to raise corresponding expectations which are sadly disappointed by the superficial and restricted nature of his treatment. We have, for example, a passing reference to Andrew Bonar Law; but we learn nothing about the influence, on the France of the Regency of the Duke of Orleans, of that much greater Scotsman, John Law of Lauriston. Nor do we learn anything of that brilliant Sicilian court of the Emperor Frederick II in which there moved as an honoured figure that Scottish scholar whom Dante was to encounter in Malebolge:

> Quell' altro, che ne' fianchi è cosi poco
> Michele Scotto fù, che veramente
> Delle magiche frode seppe il giuoco.

In reality we have in this volume, save for the engaging crackle of American idiom, little beyond a rather jejune survey of the outlines of Scottish history based on authorities that do not include the results of the most recent research work. Professor Notestein, for example, does not include in his preliminary list of authorities historians of to-day such as Dr. Alan Orr Anderson and Dr. Agnes Mure MacKenzie. It is a little disconcerting, again, to find in that preliminary list Henry Grey Graham's *Social Life of Scotland in the Eighteenth Century* figuring as Harry Scott Graham's *Social History of Scotland*; it is more disconcerting to find Professor Notestein relying complacently on Grey Graham at a time when Scottish economic historians have passed far beyond the stage reached in that pioneer volume.

It is, indeed, particularly in his treatment of Scottish economic history that Professor Notestein reveals a surprising lack of acquaintance with recent progress in Scottish historical scholarship. In the light of what we now know about the Darien scheme, his brief and perfunctory treatment of that important episode is at certain points singularly misleading. At many other points Professor Notestein's economic history invites stringent criticism. Nor is he much happier in his excursions into the fields of Scottish literature. What is the good Stevensonian to make of the generalisation that "Robert Louis Stevenson's heroes had a way of being Highland born"?

Much the most interesting point in his study is Professor Notestein's recognition, in his concluding paragraph, of the strength of the movement towards Scottish Home Rule. His reference to this movement is tantalisingly brief and perfunctory. One would have welcomed a much more detailed discussion. G. P. I.

Highland Naturalist Again: A Gamekeeper's Observations and Discoveries. By DUGALD MACINTYRE. Foreword by Eric Parker. 8×5½. Pp. 220. 8 illustrations. London: Seeley, Service and Co. Ltd., N.D. 15*s*.

Once again the author of *Highland Gamekeeper* and *Wild Life in the Highlands* has written a book of sketches about wild life in Scotland which will delight naturalists far beyond these shores. His simplicity of style and careful observation recall the artistry of W. H. Hudson, but he is an individual writer who owes his originality to nature and copies no other. His first-hand accounts of birds, beasts, and fishes make his stories of real value, such as the description of Eyes Right, the flounder whose orbs were on the unusual side, or the tragedy of Rodeo, a member of the much persecuted rat family, who committed suicide by drowning rather than be worried by a dog. The grateful reader will rise from this book like a satisfied diner from a pre-war banquet. I. W. H.

Scottish Hill Tracks: Old Highways and Drove Roads. By D. G. MOIR. 7¼×4¾. 1. *Southern Scotland.* Pp. 64. Maps: pp. 11, 13-18. 2. *Northern Scotland.* Pp. 64. Maps: pp. 4-9. Edinburgh: The Albyn Press, 1947. 2*s* 6*d* per part.

A long-felt want is supplied by this record of hill tracks and cross-country routes. For those who are not thirled to mechanical transport, and prefer to take delight in Scotland at a natural tempo, Mr. Moir has provided an essential vade-mecum. The old roads of Scotland—Roman and Mediaeval roads, drove roads, kirk and coffin roads, and roads constructed by Wade and his successors—are suitably dis-

cussed in a brief introduction, which also refers to rights of way, and to maps and place names. No fewer than 156 routes are given in the first part, and 171 in the second ; clear directions, and references to the relevant Ordnance Survey maps, are given throughout. This publication, however, is no mere catalogue of the hill tracks, but is enlivened by interesting suggestions and by notes of early references in charters and other records and on old maps.

Further, it contains excellent key maps free from irrelevant detail, with numerals to indicate the corresponding directions given in the text. One of the maps shows long-distance routes and the location of youth hostels, thereby adding to the indubitable usefulness of both parts of the book. All walkers in Scotland must be grateful to the author for this practical outcome of much painstaking research, and will also share his hope that, instead of the short stretches of road which now have to be used to link together the tracks, " we may see in time new links made so as to provide continuous paths for walkers over the length and breadth of Scotland."

J. H. K.

Mountaineering in Scotland. By W. H. Murray. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. xii+252. 32 photographs. 5 maps and diagrams. London : J. M. Dent and Sons Ltd., 1947. 18*s*.

It is interesting to consider the effect of motor transport on mountaineering in Scotland. When the pioneers explored Glencoe and Ben Nevis, it took them a day to get from Edinburgh or Glasgow to the climbing ground and a day to get back. Now it is quite usual for mountaineers to spend short week-ends in these areas. The present generation has taken full advantage of these facilities, and it has led to improvement in technique and to much exploratory work.

Mr. W. H. Murray, one of our most brilliant rock climbers, wrote this book while a prisoner of war in Germany. Reading it, one realises how much he must have enjoyed, while in captivity, putting on paper the recollections of his climbing days before the war. Considering the conditions in which the book was written, one must admire the quiet humour which runs throughout the chapters. In his climbing he showed imagination, and the spirit of adventure in his choice of routes and seasons, and brilliance in the execution of his plans. He deals mainly with Skye, Ben Nevis, and Glencoe, but there are also chapters on Lochnagar, Arran, and the Cairngorms. The whole book is good, but we were specially interested in his accounts of high camping in winter. The illustrations are excellent, and it is a book that will appeal to all mountaineers.

A. H.

Prince Charlie's Country and its Neighbouring Clan Lands. By Donald B. MacCulloch. $10\times7\frac{1}{2}$. 101 photographs. Foreword and descriptive notes. End-paper decorative maps. Edinburgh and London : The Moray Press, 1947. 16*s*.

In this well-produced book, Mr. MacCulloch has provided a magnificent series of pictures of Scotland's Jacobite country and of clan lands neighbouring Prince Charlie's country. Brief descriptions precede the photographs. The book would make an excellent gift for Scots abroad, or for foreign visitors to Scotland.

I. W. H.

Historic Morningside : Lands, Mansions, and Celebrities, with " Annals of the Parish " and some Account of Ecclesiastical Morningside. By William Mair, F.R.S.E. $8\frac{1}{2}\times6\frac{1}{2}$. Pp. 80. 39 illustrations. Edinburgh : Macniven and Wallace, 1947. 3*s* 6*d*.

The sub-title describes the work ; it discusses lands, houses, and people, relating the history of each one of the estates that formerly occupied this part of Edinburgh. A relatively large part of the book is given to ecclesiastical history. But the narrative introduces all sorts and conditions of folk : doctors, apothecaries, bankers, merchants, and lawyers—there is inevitably a sprinkling of Scots legal jargon in this chronicle. And quite a galaxy of literary stars are shown to have been in one way and another associated with Morningside. There is, indeed, a wealth of interesting and unexpected lore. The earliest mention of the name Morningside occurs in 1734 ; its origin is obscure.

In respect of matter, illustration paper, print, and binding this little book reflects great credit on all associated with its production. It is pleasant to read and to handle —and cheap.

R. T. C.

The Crossford-Hazelbank District : A Survey of Seventy Years, 1875 to 1945. By CHARLES F. HOY, M.A. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. viii+155. Sketch map. Glasgow : David J. Clark Ltd., 1946. 8*s* 6*d*.

Although written for local folks, this intimate account of a small community in Lanarkshire reflects some of the economic and social changes elsewhere during the past seven decades, including changes wrought by the impact of war. In the district itself there was a transition from a mixed economy of coal and crops to that of fruit-growing and farming, and, later, from gooseberry and strawberry to tomato growing. The changes in education during the period are very readably described by the author, and may be epitomised by his characterisation of the old Scottish country schoolmaster as a genial dictator, and by his reference to the modern child who knew the headmaster only as " the mannie that looks efter the milk."

J. H. K.

Surrey. By ERIC PARKER. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. viii+256. 49 illustrations. Sketch map. The County Books Series. London : Robert Hale Ltd., 1947. 15*s*.

It is not always realised how much the present aspect of that of Britain's counties in which we may be living has come from the interplay of varying factors down the centuries. We should be more than grateful, then, for such a pleasantly written summary as this one on Surrey, about the run of the land, and all living things upon it, the tongue and tales of its people, their way of life and work, and the habits of its creatures and plants through the vicissitudes of time, from Roman camps to the blast of flying bombs.

The author has known Surrey for nearly fifty years, and obviously loved to acquaint himself with it. The handsome full-page illustrations, approximately one to every five pages, exemplify and augment a text much fuller of verbal pictures as detailed, as factual, and as pleasant. His recording will stir the hearts of all good Surrey men and their friends.

R. E. C.

England's Eden : Isle of Wight. By EDMUND BURTON. $9\frac{1}{2}\times7\frac{1}{4}$. Pp. 89. 24 illustrations. Worcester : Littlebury and Co. Ltd., N.D. 10*s* 6*d*.

Although this is ostensibly a guide book, the author sets himself to eschew the stereotyped style of the average guide book. He has attempted a more intimate study of the island, where there is packed into very small compass such great variety of scenery and so much of historical and geographical importance. Mr. Burton's main interest is in the historical details and notable personages associated with the villages, churches, and manor houses, and less with the geography of the island—but enjoyment of the book in no way suffers from this lack. His descriptions of the leafy lanes, the open downs, the cliff coasts and sheltered bays tempt one to pack one's bag and to travel from village to village visiting all those places which the author so vividly depicts. Certain it is that the enjoyment of a visit to the Isle of Wight would be immeasurably increased by a study of this book and an assimilation of its interesting detail.

The illustrations are very well chosen and are thoroughly representative of the island's scenery. There is not a single map, and this is an omission which should be remedied in any future editions, when the value of the book would be much enhanced.

A. T. G.

Mediaeval Castles in North Wales : A Study of Sites, Water Supply, and Building Stones. By E. NEAVERSON, D.SC., F.G.S. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. vi+54. 22 illustrations. Liverpool : The University Press of Liverpool ; London : Hodder and Stoughton Ltd., 1947. 6*s*.

As its sub-title indicates, this book throws some interesting light on aspects of castle-building in North Wales which are often inadequately dealt with, if not neglected, by the archaeologist and historian. The author, who is a geologist, after a short account of the geology of the region, deals in detail with each of the castles, which are grouped according to their historical origins.

It is well illustrated with general photographs and with sketch maps of the more important sites. A little more attention might have been paid to the lettering on the maps, to give them a more finished effect.

R. M. P.

Rural Life in Northern Ireland. By JOHN M. MOGEY, M.A. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. xv+240. 44 figs. 8 plates. London : Oxford University Press, 1947. 15*s*.

Rural Life in Northern Ireland consists of five local studies, prefaced by two chapters giving brief but useful surveys of Northern Ireland as a whole and of its rural areas. Mr. Mogey was Rural Survey Officer for the Northern Ireland Council of Social Service, and the emphasis in these studies is determined by the interests and immediate requirements of that body.

Against a background of geographical and historical studies of a general character are set the results of a detailed examination by household questionnaire in sample areas, covering 1018 out of a total of 144,000 rural families. The areas were selected with regard to changes in population, and information was elicited on the composition of the household, its religious affiliations and other associations, the residence of members absent from their original home, household expenditure, housing and sanitation. County Fermanagh, a lowland area of heavy clay soils, having characteristics regarded as typical of 11 per cent. of the rural area and 8 per cent. of the rural families of Northern Ireland, is given most space. Hilltown, County Down, a hill-foot marginal farming area, is taken as representative of 30 per cent. of the area and 20 per cent. of the families ; the Braid Valley, County Antrim, an area with high farming standards, represents 9 per cent. of the area and 10 per cent. of the families. North Down, with specialisation in milk and vegetables, represents 11 and 19 per cent. respectively, while North Antrim, average mixed farming country, stands for 30 per cent. and 33 per cent.

The work as a whole throws much light on the migration from rural districts to the town and abroad. The sharpest break in social outlook is found between the small towns and those with a population of 10,000 or more. C. J. R.

Irish Miles. By FRANK O'CONNOR. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. vi+185. 24 illustrations. London : Macmillan and Co. Ltd., 1947. 12*s* 6*d*.

In lighter vein, Mr. O'Connor has recorded a cycling pilgrimage to places of architectural interest in Ireland, admirably illustrated with his own photographs. The gaiety of his journey is frequently embittered by observation of the neglect of these monuments, a neglect which he attributes partly to officialdom, partly to indifference of the Irish public. C. J. R.

Monasterboice, Co. Louth. By R. A. S. MACALISTER, D.LITT., F.S.A. $8\frac{3}{4}\times5\frac{5}{8}$. Pp. 79. 17 figs. 19 plates. Dundalk : W. Tempest, Dundalgan Press, 1946. 10*s* 6*d*.

Guide to Monasterboice. By R. A. S. MACALISTER, D.LITT., F.S.A. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 24. 6 illustrations. Dundalk : W. Tempest, Dundalgan Press, 1944. 6*d*.

Dr. Macalister's short history of Monasterboice, with chapters on its sculptured crosses, round tower, churches and other antiquities, is generously illustrated with photographs and drawings. The book is produced with a distinction we have come to expect from the Dundalgan Press.

The abbreviated guide by the same author, too, is commendable. C. J. R.

Normandy. Edited by ALAN HOUGHTON BRODICK. $8\times5\frac{1}{2}$. Pp. xxx+319. 207 photographs. Sketch map (1 : 500,000). The People's France, Vol. 1. London : Hodder and Stoughton Ltd., 1947. 18*s*.

This pleasing volume is the first of a new series under the general title of *The People's France*. The introduction contains a summary of the history of the land and its inhabitants and of their relations with Britain ; it ends with a brief account of the present post-war state of the province. The body of the work is occupied by some two hundred excellent photographs : rural glimpses, harbours and towns, humble cottages and, above all, architectural treasures ; and by notes, arranged alphabetically and often of considerable length, on a vast number of localities. These notes, fully indexed, cover topography, history, biography, legend, and art.

Obviously the book is not one to be read straight through. It presents in fresh and interesting form an enormous mass of varied information, and should commend itself to the attention of geographer, tourist, and arm-chair traveller alike.

R. T. C.

Poland's Place in Europe. By Maria Kielczewska Zaleska, Tadeusz Lehr-Splawiński, Zygmunt Wojciechowski, and Jozef Feldman. Edited by Zygmunt Wojciechowski. Translation by Prof. B. W. A Massey, M.A. 8×6. Pp. 460. 27 sketch maps. Poznań : Instytut Zachodni, 1947. London : The Reader (Publishers and Distributors) Ltd. 40*s.*

The translation of this book needs revision. It is not that the translator is, in the old Italian phrase, a traitor to his originals : his version reads like an all too faithful reproduction of the Polish, and occasionally one has the impression that the translation has been made not by an English scholar who knows all there is to know of Polish, but rather by a Pole with a remarkable knowledge of English. Now and then there is a foreign use or omission of the definite article, and many curious words are employed ; some of them are good dictionary words that are obsolete, rare in the sense intended, or unnecessary ; some are simply incorrect. And something of the inevitable iteration might have been cut.

But whatever may be thought of the translation, this work is an able and detailed exposition of the Polish question from the Polish point of view, and merits the serious attention of all interested in the fate of Central Europe. Too long we have been content to accept mainly German views of this matter, and, as one of the contributors to this book points out, that is no more hopeful a means of approaching the truth than it would have been, during the late war, to believe the invader's report of his behaviour in the Slav lands. The book contains four essays by four professors at Toruń, Kraków, and Poznań, under the editorship of one of them, a valuable appendix dealing with the left bank of the Oder, and many maps. The subjects treated are the Geographical Bases of Poland, the Origin and Ancestral Home of the Slavs, Ten Centuries of Struggle between Poland and Germany, the Last Ten Years—this is really a review of foreign relations since 1900.

It is stated that " the policy of a nation is rooted in its geography," and the whole long discussion is carried on with that principle in mind. The main thesis is this : the homeland of the Poles from the tenth century was the *basins* of the Vistula and Oder bounded on the north by the sea and on the south by the mountains ; only German expansion compelled the Poles at certain periods to abandon some of their positions, and German methods of expansion have been similar in all ages ; the region claimed as geographically and historically Polish constitutes a single political organism, and, for the peace of the world, that organism must be Poland. The argument is well documented. The geographical sections are interesting and appear to be sound. In the historical chapters, while we are never allowed to forget that the pedigree of Nazism goes far back, the negligence, the blunders and follies of Polish rulers are by no means glossed over. Nor is the rôle of Russia ignored.

Considering that this work, in English, was produced in Poland, it is very creditable that misprints are few. R. T. C.

ASIA

Pictures from Persia. By Cecil Keeling. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 186. 30 colour plates by the author. London : Robert Hale Ltd., 1947. 15*s.*

Let it be said straight away that this is not a book of travel or of objective geographical description in the wider sense. It is the record, in words and drawings, of the author's personal experiences, impressions, and discomforts whilst with the British Army in West and Central Persia during the autumn and winter of 1941-42. But if scarcely for a wider public, it will certainly be read with interest and appreciation by all those whose fortune it was to be stationed with ' Paiforce ' during the war years.

The verbal descriptions of the scenes observed show the author to be possessed both of the power of close observation and of an artist's eye, although often there is a feeling that he is striving for effect and has overwritten for that end. Poverty, hunger and dirt, whilst far too present in Persia, do not comprise the whole Persian scene.

Regarding the drawings (which throughout partake more of the caricature than portrait), the small side-sketches in black and white are very good. The colour plates, unfortunately, do not approach the same standard. W. Br.

La Sibérie : La Vie en Sibérie—les Temps anciens. By Kai Donner. Translated from the Finnish by Léon Froman. 9×5½. Pp. 245. 24 plates. 5 sketch maps. Collection " L'Espèce Humaine," No. 6. Paris : Librairie Gallimard, 1946. 205 *fr.*

This work, originally published in Helsinki in 1932, is the fruit of much study and personal observation, for the author has first-hand knowledge of the immense territory under review, especially western Siberia, a region lying, as he says, between two civilisations, Rome and China. The background is given in a long Introduction. Then the geological and geographical aspects are dealt with and, at greater length, anthropology, archaeology, and the linguistic evidence. Mediaeval history is briefly outlined, and there is a longer account of the Russian conquest and occupation. Nearly one-fourth of the text is devoted to the reindeer, the rearing of which touches at some point every topic discussed in the book. One of the most interesting chapters reveals something of shamanism, of human sacrifice, and of the resistance offered by paganism among the northern tribes to the spread of both Christianity and Islam.

The whole work gives the impression of being not only well informed but remarkably honest : several times, after laying before the reader his vast store of facts and his more modest conclusions, the author reminds him that much still remains to be discovered, and that the critical spirit is always in place in considering such a mass of information. R. T. C.

A Expansão da Fé no Extremo Oriente (Subsidios para a Historia Colonial). By Pe Antonio Lourenço Farinha. Vol. III. 9×6¼. Pp. 497. Lisbon : Agência Geral das Colónias, 1946.

From the time of Prince Henry the Navigator onwards, missionary zeal was one of the basic motives of Portuguese expansion ; and missionary effort, including the labours of such great men as St. Francis Xavier and Mateo Rici, has always been among its leading features. Of that activity in the Far East, the present volume furnishes a valuable conspectus. H. C. M.

AFRICA

Ethiopia : The Study of a Polity, 1540-1935. By David Mathew. 8½×5½. Pp. ix+254. 16 plates. End-paper sketch maps. London : Eyre and Spottiswoode (Publishers) Ltd., 1947. 15*s.*

This work is essentially a studied history of the constitution of the government of an African country of unique characteristics in people and environment. Though largely historic, it is nevertheless surprisingly satisfactory in its sympathetic touch with geographical conditions in Abyssinia. The author's knowledge of the high plateaux gives the reader first-rate descriptions of a region which is, without doubt, one of the gem spots in all Africa. Though the volume covers a period from 1540 to 1935, time has changed little in this land of enviable seclusion, which, consequently, retains much of the privacy of natural living according to inherited customs rather than acknowledge the outside influences of a world largely overgrown and ruined by immoderate civilisation.

The old roads of access into Abyssinia are described in the third chapter, and still remain, in general, the same routes as in the past. The book conveys a clear impression of the lovely scenery, rarified atmosphere, and wonderful fertility of the highlands—at an average altitude of round about 8000 feet—while making apparent the virtue of such things to the African traveller who must make approach to the high plateau from the heat-laden land of semi-desert which completely surround it : above which it towers magnificent and vast, and still possessed of mystery from the historic background the author so ably depicts. A. B.

I Look Back. By J. R. P. Postlethwaite, c.b.e. 7¼×5. Pp. 204. Frontispiece. London and New York : T. V. Boardman and Co. Ltd., 1947. 9*s* 6*d.*

The author entered the Colonial Service in Uganda in 1909, and retired in 1932 as Provincial Commissioner of Buganda. He belongs to the period when men of action were bringing great stretches of Africa under British rule by the exercise,

mainly, of personality and initiative, and his contempt for the modern ' office-boy ' administrator can be well understood.

The geographical value of the book lies in the descriptions of people, places, and politics in Uganda before modern sophistication dawned. The book tails off into an account of the author's activities or otherwise in retirement, in the Ministry of Food, and in UNRRA. R. M.

The Remarkable Expedition : The Story of Stanley's Rescue of Emin Pasha from Equatorial Africa. By Olivia Manning. 8½×5½. Pp. 273. End-paper maps. London : William Heinemann Ltd., 1947. 15*s*.

It all began at a meeting of the Scottish Geographical Society in the year 1886. Dr. Robert W. Felkin, a member of the Council, and at that time a lecturer in tropical medicine at the University of Edinburgh, had been receiving disquieting letters from Emin Pasha which aroused considerable interest both at home and on the Continent, and thereupon read a paper [*S.G.M.*, Vol. 2] before the Society, in the course of which he made a strong plea for the relief of his friend who had been cut off from supplies and was in dire need of help. Dr. Felkin discussed three routes that might be followed [see map, *S.G.M.*, Vol. 2], all entering from the east coast—and suggested that a small semi-scientific expedition under Joseph Thomson should take the necessary supplies. Towards this end the Society voted £1000. This scheme had the unanimous support of African explorers, both British and foreign.

But, as public interest in the expedition increased and money flowed in, a more elaborate expedition was thought necessary, and Stanley, who had made a name for himself in the search for Livingstone, was called upon to undertake the leadership. For some ulterior motive, and against all experience and advice, Stanley elected to go via the Congo. From Zanzibar he, with eight white officers, most of whom had no African experience, and eight hundred natives, sailed round the Cape, up the west coast, and used the Congo waterway as far as possible. But it was to take him two years before he reached Emin, and in that interval there was crowded such suffering, death and disaster as has seldom fallen to an African expedition. Famine, sickness, desertions, and the hostility of natives were bad enough, but to these must be added bad tempers, resentments, allegations and recriminations, leading in the end to much controversy. Emin was at last relieved and accompanied Stanley to the coast, but he would go no further, and returned again to the Africa he loved, only to be murdered by natives a few months afterwards.

So ended the Remarkable Expedition. It was a disastrous affair and, in the light of all that transpired, one feels that had the advice of the Scottish Geographical Society been taken, not only would the end have been achieved more quickly, but the world would have been saved the wranglings and heart burnings that followed Stanley's efforts. And in proof of this let it be said that a later German relief expedition under Carl Peters left by the east coast route and reached its destination in quite a short time, only to find that Emin had already left with Stanley. It is difficult to understand why the story should now be retold. One had hoped the curtain had fallen on that catastrophic effort, never to be raised again.

The opening chapter, on the Egyptian Empire, is welcomed as throwing light on the present Anglo-Egyptian question. J. R.

AMERICA

Land of Promise : The Story of the Northwest Territory. By Walter Havighurst. 8½×5½. Pp. viii+384. End-paper sketch maps. New York : The Macmillan Co., 1946. 15*s*.

To British readers the Northwest Territory suggests Arctic Canada, but Mr. Havighurst's story is of that " Land of Promise " which was once the north-west frontier of the United States, comprising the present states of Ohio, Indiana, Illinois, Wisconsin, and part of Minnesota. His story is of the slow dispossession of the aboriginal Indian inhabitants, of the French colonisation, of the wars between France and Britain, and Britain and the new republic of the United States ; of the industrial age with its great canals quickly outclassed by the railways and the motoring highroads, over which the transcontinental airplanes now fly. His tale is

so packed with incident that the reader is at times a little in danger of mental indigestion, were the narrative not delightfully enlivened here and there with stories and incidents.

The book will appeal particularly to the American public for whom it was written in the first place, but should do much to instruct others in a part of the world—and its history—which is surprisingly little known elsewhere. I. W. H.

Mountaineering in the Sierra Nevada. By Clarence King. Edited and with a Preface by Francis P. Farquhar. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 320. 8 illustrations. London : Adam and Charles Black Ltd., 1947. 16*s*.

Although this book was published in America many years ago, this is the first British edition. It may have rather a limited appeal in this country, as it deals with mountains in California which are not very well known here. But it does give a picture of Western America in the 1870's, and besides describing pioneering in the Sierra Nevada, it gives a picture of life there at a time when, on account of bushrangers and highwaymen, travel was not always safe. Clarence King was a man of wide culture and, although his skill as a mountaineer may not have been up to present-day standards, he was a man of great courage and did a considerable amount of exploring in the Sierra Nevada. He writes with imagination and charm and in the style of that era.

The illustrations are well above the present-day standard of reproduction, and our only regret is that there are not more of them. A. H.

The Ancient Maya. By Sylvanus Griswold Morley. 9×6. Pp. xxxii+520. 57 figs. 95 plates. 12 tables. Bibliography. Stanford University : Stanford University Press, 1946. London : Geoffrey Cumberlege. $10.00 or 55*s*.

In our preoccupation with Ancient Greece and other centres of early civilisation we are apt to forget that in the New World, too, there were, in pre-Columbian times, nations and empires quite as wonderful as those of the Orient. There were Incas in Peru, and Aztecs in Mexico, but more remarkable were the Maya people, inhabitants of the peninsula of Yucatan. Magnificent sculptured palaces and monuments have been freed from the embrace of the jungle only within recent years, and one of the most active participants in the work of restoration has been the author of this book, Dr. Sylvanus G. Morley, probably the greatest living authority on Maya archaeology.

Maya civilisation, as we know it, falls into three periods. There was first the Old Empire, dating certainly from A.D. 317, the date of the oldest inscription hitherto confirmed, although the shadowy beginnings of Maya achievement may be traced back to the third or fourth century B.C. The Old Empire had its golden age about A.D. 800, then suffered decline and fall, a circumstance probably accelerated by epidemic disease. There followed, from A.D. 987 to 1527, the New Empire, which was brought to an end by the Spanish conquest. Nevertheless, descendants of the Ancient Maya still dwell around the ancient sites, bearing a close physical resemblance to their ancestors, and perpetuating the arts and crafts of those forebears in ceramic and textile design.

The author gives a fascinating account of his forty years of acquaintance with Mayan civilisation. The first half of the book deals with the country and the people, the origin of Maya civilisation, and the history of the Old and New Empires and of the Spanish conquest. Agriculture, and especially the cultivation of " maize, the Maya staff of life without which they never could have developed their highly distinctive culture or their empire," was their principal activity and perhaps their greatest gift to posterity. Out of the need for reckoning times and seasons for planting, reaping, and other operations, grew that deep concern with chronology which is so obvious in monumental inscriptions. Arithmetic and astronomy together supplied the calendar. Another noteworthy achievement was the development of an original system of writing which may be traced in the existing stone-carvings, although only three manuscripts are known to have survived. The carvings on the great buildings—at Tikal, Copan, and Chichen Itza, to mention only three of the many Maya centres of civilisation—are among the most remarkable when we recollect that no metal tools were used : it was virtually still a stone age.

Furthermore, man-power was predominant, and the Mayas had no horses, nor cattle, to assist in agriculture and in building.

" The most brilliant aboriginal people on this planet," as Dr. Morley designates the Mayas, deserve to be better known than they are. The present attractive work will appeal alike to the amateur and to the expert, and it will undoubtedly take its place as the standard authority. There is an adequate index, and there are many interesting illustrations, and for those who wish to pursue the subject further, a classified bibliography. D. G.

Brazil : People and Institutions. By T. Lynn Smith. 9×6. Pp. xxiv+843. 29 figs. 70 photographs. 78 tables. End-paper maps. Baton Rouge : Louisiana State University Press, 1946. $6.50.

Brazil is not a well-defined nation, but a heterogeneous collection of almost all the ' races ' of mankind : Portuguese colonists, the original Red Men of South America, African Negroes descended from slaves, poor Portuguese, Spanish and Italian agricultural workers, German, Polish, Russian, Turkish, Mongol, Chinese and Japanese immigrants. These ' races ' are all in the melting-pot, and what the ultimate product will be no one can foretell. The cross-breeds of these white, black, yellow, and red races are legion, and their customs, outlooks, institutions, and religions are just as varied. From the witches' cauldron of humanity the author has extracted and compiled a very comprehensive demography.

Brazil is essentially a rural country, and the development of its agriculture naturally takes pride of place. Possibly more ' poor labourers ' migrate into Brazil than into any other country, yet the cry *falta de bracos* (lack of hands) is almost the national anthem of the country. Disease is rampant : malaria, yellow fever, parasitic worms, tetanus, dysentery, venereal disease, and leprosy are common everywhere, and the workers, soon stricken by disease, become phlegmatic, listless, and of little value in the labour market. The medical service is totally inadequate to deal with the demands upon it, and education and culture generally are very backward.

Many statistics and tables are given, and though the volume extends to over 800 pages it is simple, straightforward, and readable throughout. Its value is increased by an extensive glossary of Portuguese terms, a bibliography, and an index. R. R. W.

OCEANIA

Trail of the Money Bird. By Dillon Ripley. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. xv+336. 18 illustrations. End-paper sketch maps. London : Longmans, Green and Co. Ltd., 1947. 15*s*.

This book records an ornithologist's travels in the extreme north-west of New Guinea on behalf of the Academy of Natural Sciences, Philadelphia. It also includes the author's passage across the Pacific in a tiny schooner, making calls at various islands.

The main interest is centred in exotic birds, but there is more besides. The book is well and easily written, and the illustrations are excellent. C. R. V. G.

Do Kamo : La Personne et le Mythe dans le Monde mélanésien. By Maurice Leenhardt. $7\frac{1}{2}\times4\frac{3}{4}$. Pp. 259. 14 figs. Paris : Librairie Gallimard, 1947. 295 *fr*.

New Caledonia was discovered and named by Cook in 1774 ; but in the middle of the following century it was annexed by the French who used it as a penal colony until 1896. It was sparsely populated by Melanesians of a warlike and cannibalistic nature, who in the south of the island have an admixture of more primitive Austro-Melanesian blood and in their physical structure recall Neanderthal Man.

In this work M. Leenhardt, who speaks with authority on this part of Melanesia, analyses not only the attitude of these primitive folk to the world around them but also the myths which they evolve to explain that world. Incidentally, the author raises some pregnant issues for civilised man to ponder. M. Leenhardt's attitude as a pupil of Lévy Bruhl is careful and above reproach. With a precise knowledge of the language, he has avoided the errors of a former generation of field workers who set themselves too low a standard in the matter of linguistics, and who failed

to see that a deep insight into the psychology of a people may be obtained from a careful study of the way they express their thoughts in language.

Hitherto the ethnology of the New Caledonian peoples has been somewhat neglected. This book more than repairs the omission. C. A.

OCEANOGRAPHY

The Wealth of the Sea. By T. S. Douglas. $7\frac{1}{4}\times4\frac{3}{4}$. Pp. 144. London : John Gifford Ltd., 1946. *7s 6d.*

This up-to-date, compact little volume tells in admirable and delightful fashion the fascinating story of the sea as an immense reservoir of food, of raw materials, and of tremendous energy and power.

The great problems hitherto have been, and for the most part remain, those concerned with the economical realisation of the sea's vast resources in these respects. The exigencies of two world wars, however, have focussed attention anew on some of these problems, with intensely absorbing and some highly profitable results accruing. Some of these results continue to be energetically pursued with increasing success, but not all of them will be of practical significance in peace time.

On the other hand, national and world economic conditions may well, with the new knowledge and facilities now available, force further attention and intensify research upon the potentialities of marine resources. Few countries, if any, are more favourably disposed for such investigations than is Great Britain. In anticipation, therefore, of developments which can confidently be expected in industry and in commerce from the development of oceanographical science, as well as for the mere pleasure to be gained from reading a most interesting book, the volume under review is to be highly recommended. J. B. T.

EDUCATIONAL

The Story of Migration. By E. A. R. Ennion, M.A. $10\times7\frac{1}{2}$. Pp. 100. Drawings by the author. London : George G. Harrap and Co. Ltd., 1947. *10s 6d.*

The migration of animals is a very fascinating and, also, very complex subject. To discuss it effectively in simple language, avoiding the specialist's jargon, is no mean achievement. After briefly reviewing the successive appearance of animal phyla through the ages, the author deals with migrations of monkeys and man, with hunters and herdsmen, the overland migration of mammals, with mammals of the sea, and fishes. Four chapters are devoted to birds and other flying animals, one chapter being reserved for the swallow. Spring and autumn arrivals of common British migrant birds are listed in an appendix.

Young and not so young lovers of nature will be grateful to Mr. Ennion for this readable and instructive story, and for more than one hundred pleasing drawings, and to the publishers for the production of an attractive book at a reasonable price. J. H. K.

Our Forests. By W. H. Rowe. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 173. 34 photographs. London : Faber and Faber Ltd., 1947. *12s 6d.*

It is satisfactory to find a primer on forestry with such up-to-date information as the government's post-war forest policy outlined and discussed. The book rightly points out that, since its inception in 1919, the Forestry Commission has been so preoccupied with its own afforestation programme that it has taken little interest in the rehabilitation of private forests. The extent to which such rehabilitation is now needed is clearly shown, but no detail is given as to how the Forestry Commission proposes to tackle their target of 1,350,000 acres of private woodland in the next twenty years.

The frequent use of the word ' de-afforestation ' is to be deplored in an otherwise well-written book ; the more accurate form is ' disforestation.' The author's views on the contribution which forestry can make towards a strong and thriving rural community are exceedingly sound and should be read by all, for the wider implications of afforestation as a means of securing shelterbelts, cover for game, controlled run-off in rivers, and the enhanced beauty of our countryside are not

publicised enough in Britain. All phases of forestry work from the nursery to the disposal of timber are adequately covered for the beginner, and the illustrations are well chosen and well reproduced, so this book should be valuable in schools, scout troops, and young people's clubs. R. M. G.

GENERAL

Writing and the Alphabet. By A. C. Moorhouse. $7\frac{1}{2}\times5$. Pp. xiii+97. 9 plates. Past and Present, Vol. 5. London : Cobbett Press Ltd., 1946. 7*s* 6*d*.

This is another valuable member of the *Past and Present* Series, and, within the limits of space available, the author has successfully achieved a very wide survey of his subject. Practically all the important scripts which have developed in the long history of communication by signs are reviewed, and their origin and characteristics. The trend of development, whether it has reached the ideographic form of China or the alphabetic form of western Asia and Europe, brings out the essential unity of man's history. In the second part of the book, on the use of writing, there is a succinct but comprehensive survey of the historical influences of writing and a brief account of recent efforts to combat illiteracy. S. C. F.

The Photography of Scenery. By Vaughan Cornish, D.Sc. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 129. 60 photographs. London : Sifton Praed and Co. Ltd., 1946. 12*s* 6*d*.

It would be invidious to single out for comment any one of these photographs. They fall into two groups, illustrating Nature and the Arts, though natural and man-made scenery is necessarily blended in some views. All are of geographical interest and are accompanied by well-phrased explanatory notes. J. H. K.

A Handbook of Sociology. By William F. Ogburn and Meyer F. Nimkoff. Preface to the English Edition by Karl Mannheim. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. xi+644. 36 figs. London : Kegan Paul, Trench, Trubner and Co. Ltd., 1947. 25*s*.

The publication in Britain of this American work is a useful addition to a valuable series. It deserves notice in a British geographical periodical, since in Britain geography has suffered from lack of a vital connection with social studies, so long retarded here. It is true that geographers may not find the authors' attempt to link their study with geography entirely successful, in so far as the geographical ' principles ' stressed do not include those most fundamental to modern geography from Vidal de la Blache onwards—reflecting rather the by-roads followed by Brunhes, so popular for a time in the U.S.A. Nevertheless, the geographer has much to learn of progress in the studies of ' human nature, collective behaviour, communities, social institutions and social change,' the subjects of the parts in which the authors are most at home.

Well referenced and scholarly, the work is readable and will appeal to the widening public who realise the necessity for focussing the social bearing of business and economic life, the professions and administration. A. G.

The United Nations Association Yearbook, 1947. Edited by H. R. Madol and Officials of the United Nations Association. $8\frac{1}{2}\times5\frac{1}{2}$. Pp. 296. London : Hutchinson and Co. (Publishers) Ltd., 1947. 25*s*.

Because the aspirations and activities of the United Nations Association directly and indirectly affect all human beings, the publication of this book of reference is important. It contains : the Charter of the United Nations and list of signatory States ; the Statute of the International Court of Justice ; the Constitution of the United Nations Educational, Scientific and Cultural Organisation, of the World Health Organisation, and of the Constitution of the International Labour Organisation ; the text of the Trusteeship Agreement with regard to Tanganyika ; also other documents are reproduced verbatim. The achievements of the General Assembly are reviewed, and an account is given of the United Nations Department of Public Information. Members of the various governments are listed. Certain national documents are reproduced, and of the various statements made by Ministers, that by Mr. Jan Masaryk is by far the most readable. J. H. K.

Colonial Administration by European Powers. A Series of Papers read at King's College, London, 14th November to 12th December 1946. By Jose de Almada, Robert Godding, Lord Hailey, A. M. Joekes, H. Laurentie. Foreword by Viscount Astor. 7½×5. Pp. xiii+97. London : Royal Institute of International Affairs, 1947. 4*s* 6*d.*

The European powers referred to are Portugal, Belgium, Britain, Netherlands, and France, and the names of their respective spokesmen are cited above. The brevity of their papers is in itself a recommendation, for it implies that each national has dealt with what he regards as the most important aspect of his country's colonial administration.

Portugal turns rather to the past, but is at pains to show that she also looks forward. France and Holland are concerned mainly with rescuing what they can from the wreckage of the war. Britain, as has been the fashion in recent years, is occupied mainly with the niceties of political relations between the Dependencies and the United Kingdom. Belgium alone is jubilant and confident. Not only did the Congo not desert her in her capitulation, but it financed all the operations of the Free Belgian government and supplied the allies with much valuable raw material, even manufactures. Concentrating on material progress and not worrying overmuch about the political education of the African, the Congo has been developed rather as an independent state—an evolution which the war did much to further. It will be interesting to see whether, in years to come, the Belgians, by keeping physical well-being on the up-grade, can continue to enjoy the comparative freedom from nationalist sentiment which at present exists. R. M.

On Governing Colonies—Being an Outline of the Real Issues and a Comparison of the British, French, and Belgian Approach to them. By Lt.-Col. Walter Russell Crocker. 8½×5½. Pp. 152. 15 illustrations. London : George Allen and Unwin Ltd., 1947. 10*s* 6*d.*

The author states that this book was written in his spare time while on military service overseas. It is thus not a scholarly work : it shows little evidence of reference to the work of others, and makes but slight attempt to go to the fundamentals of the matter in climate, soil, disease. It sets out briefly (pages are too few to allow the subject to be developed) the results of the author's personal experiences and observations as a civil and military officer in West Africa and the Congo, and it has very great value in the bold and arresting manner in which he praises and pillories men and institutions, black and white.

Some of the statements made will sound utterly fantastic to those unfamiliar with the area, and, unfortunately, the often rather journalistic style will encourage them to discount some of the claims. The reviewer can but, from his modest experience of ' The Coast,' commend the book as soberly and regretfully true. The same agreement cannot, however, always be extended to the judgments passed. Like the author's *Nigeria*, it should be read by all about to embark on a career of governing colonies. Like that book, it will no doubt be excluded from the Colonial Office list. It provokes thought, it exposes a great deal of dirty linen to the public gaze, it is brutally direct with no conventional veil or tactful verbiage, and it refuses to overlook inconvenient and uncomfortable facts. R. M.

Britannia Overseas : Outline of the British Colonial Empire. By E. W. Evans. 7½×4¾. Pp. ix+172. 19 photographs. Sketch map. Edinburgh : Thomas Nelson and Sons Ltd., 1946. 6*s.*

This is an introductory sketch of individual colonies, preceded by a brief political outline of the Colonial Empire as a whole. Covering nearly all the colonial territories (a few, such as the ocean colonies of Seychelles, Falklands, and British North Borneo, are omitted as well as the mandate of Palestine), the treatment is inevitably cursory, but the author has had first-hand experience of colonies and their problems. The book is no mere reference volume of facts and figures. The early history of each colony and the method by which it was added to British possessions is followed by a summary of economic and social developments and by a description of the present aspect and problems of the colony. Comparisons between the area of the colonies and that of European countries are valuable reminders of the large size of some of them. The chief drawback of the book as an introduction to the Colonial Empire

is its arrangement. The colonies are treated alphabetically, and the lack of a regional approach is felt especially in the piecemeal description of the West Indies and the African colonies. B. D. B.

British Adventure. Edited by W. J. TURNER. Introduction by Nigel Tangye. 9×6¼. Pp. 324. 48 plates in colour. 120 illustrations in black and white. London : William Collins, Sons and Co. Ltd., 1947. 21*s.*

This book is a reprint of six of the *Britain in Pictures* series bound in a single volume—" British Merchant Adventurers," " British Polar Explorers," " British Mountaineers," " British Seamen," " British Soldiers," and " Britain in the Air." The last four cover the full range of their subjects, and the first recounts some typical careers. " British Polar Explorers " is the full story of British endeavour in the Antarctic, but the Arctic record is confined to the voyages of the Elizabethans and the work of Franklin.

The authors of " British Seamen " and " British Soldiers " have been more fortunate than the other writers, since the continuous evolution of the Navy and Army over the centuries has provided them with greater scope. Mr. Mathew has his eye mainly focussed on the Quarter Deck, but Mr. Johnson constantly strives to bring the " other ranks " right into the picture.

British Adventure is superbly illustrated in colour, from contemporary paintings, and also in black and white. The text virtually ends with 1939, but the Naval, Army, and Air Force sections include pictures from the second world war.

C. R. V. G.

In Quest of Spices. By SONIA E. HOWE. 8½×5½. Pp. 268. 28 plates. 25 text illustrations. 24 sketch maps. London : Herbert Jenkins Ltd., N.D. 15*s.*

A preliminary glance at the quaint and attractive illustrations which adorn almost every page of this work led the reviewer to surmise that here, indeed, was a travel book of rare originality, guiding its readers on a series of journeys in time and space, in history as well as geography. On closer investigation, one discovers that the mass of factual information is so great that some of the interest of the narrative is lost, and the reader is bewildered by the speed of his journey, which ought to be more leisurely and reflective in a work of this nature. Nevertheless, the theme is novel and interesting, and the book is certain to take its place as an authoritative history of the age-long trade in spices.

The author unfolds her story of ships and caravans with their rich cargoes, from the days of Prince Henry the Navigator in the 15th century to those of Monsieur Pierre le Poivre who brought clove and nutmeg seedlings to the Ile de France in the 18th century. Numerous little sketches add interest to the tale, as also do the outline maps, though scanty in detail. There is little mention of the numerous drugs and herbal remedies which were at one time of great importance in trade and were included in the category of spices. The book ends with a bibliography which does not pretend to be complete, but it may well serve as a guide to other writers who may choose to follow the trail blazed by the author. The absence of an index, however, is a grave defect. D. G.

The Delectable Mountains. By DOUGLAS BUSK. 8¾×5⅝. Pp. xi+274. 47 plates. 4 maps. Sketches by Bridget Busk. London : Hodder and Stoughton Ltd., 1946. 21*s.*

Mr. Busk here describes his mountaineering experiences in many parts of the globe, beginning with schooldays in Switzerland, when a mythical aunt provided the excuse for days on the Engadine mountains, and with holidays spent in the Pyrenees. Then Oxford University Mountaineering Club provided further experience in the Alps, and Princeton with ski-ing in the White Mountains, so that the author was able to take full advantage of a visit to the Rockies, where several climbs are described. Two interesting chapters are devoted to mountaineering in Persia, including the ascent of Persia's highest peak, Demavend (*c.* 18,600 ft.) ; some scrambles on South African mountains are described, and the book ends with a chapter on ski-ing. The narratives are made interesting by the author's enthusiasm, and those interested in climbing will find many useful remarks and discussions on the technical aspects of the craft. D. G. M.

Patrick Geddes in India. Edited by JAQUELINE TYRWHITT, A.I.L.A., A.M.T.P.I. Introduction by Lewis Mumford. Preface by H. V. Lanchester, D.LITT., F.R.I.B.A., P.P.T.P.I. $8\frac{3}{4}\times5$. Pp. 103. Frontispiece. 32 photographs. 7 diagrams. London : Percy Lund, Humphries and Co. Ltd., 1947. 10*s*.

Between 1915 and 1919, Patrick Geddes made reports on the planning of eighteen Indian cities, commissioned either by the Indian government or by Indian princes. These reports are little known in this country. The editor of this small book, in co-operation with A. Geddes and H. V. Lanchester, has rendered a service to all planners by collecting some of Geddes' most striking ideas and methods of approach, and by grouping them together irrespective of this or that city.

Geddes was far in advance of other town planners, and his vision and his aims may well inspire the planners of to-day and to-morrow. He was an eminently practical man, but was often denied that quality by those who knew him little and who, in merely practising the mistakes of their predecessors, showed antipathy to progress or even to any form of change. Several of the extracts insist on the preliminary diagnostic survey of the city or region before the application of constructive surgery. There Geddes showed his essentially practical outlook, the retention of all of value and no mere iconoclastic demolition. Nor must tradition be scorned, though it must never be an overruling taskmaster. The roots of regional culture, if alive, must be nourished, but local culture is not complete or adequate by itself : it lies at the foundation for a wider nationalism. One is struck also with the amazing versatility of Geddes : with his unfailing observation of the smallest things and his quick understanding of their significance. The new city was to be a rebirth of the old with the dead wood cut out and live shoots fostered and guided.

We are sorry that the editor did not add a sketch of the life story of P. G. for those who had not the good fortune to know him personally. The portrait is almost adequate. R. N. R. B.

ATLASES

Atlas of World Affairs. By CLIFFORD H. MACFADDEN, HENRY MADISON KENDALL, and GEORGE F. DEASY. Foreword by Col. Sidman P. Poole. $10\frac{3}{4}\times11$. Pp. x+179. New York : Thomas Y. Crowell Co., 1946. $2.75.

Compiled for the general public in the U.S.A., this atlas would also be of some interest to the European newspaper reader and to the school teacher. The atlas contains sketch maps and diagrams, summary descriptions and statistical information. Beginning with air-distances and major world distributions, the atlas deals with the United States, naturally in more detail, then with political and economic conditions in Europe, Africa, Asia, and the Pacific countries. Further, there are physiographic and other diagrams, also sketch maps showing motorable roads, railways, and ocean highways, economic self-sufficiency, raw material sources, European buffer states and boundary problems, the Axis retreat from Africa, Japanese invasion routes, and the Allied counter advance.

Ice Atlas of the Northern Hemisphere. $24\frac{1}{2}\times24\frac{1}{2}$. Pp. 106. Bibliography. Washington, D.C. : Hydrographic Office, United States Navy. First edition, 1946. $8.00.

Work on this monumental atlas was started by Dr. J. C. Weaver in 1942 at the headquarters of the American Geographical Society, under the auspices of the Division of Geography and Cartography of the United States Department of State, and was transferred to the U.S. Navy in 1944. The assistance of Mr. S. W. Boggs, Mr. C. B. Hitchcock, and Dr. L. M. Gould is also acknowledged by the Hydrographer.

The charts and tables are divided into several sections : Northern Hemisphere Sea Ice, Northern Hemisphere River Ice, Grand Banks Region, Baltic Sea, Black Sea, White Sea, and Okhotsk Sea Region. Ice is indicated on the charts according to categories of navigability, from the inaccessible permanent polar pack to sea and land-fast ice generally navigable by unreinforced vessels. Available iceberg data, particularly in the Grand Banks region, are analysed and mapped. Seasonal freezing and thawing of rivers are tentatively indicated by means of isopleths.

The extent and reliability of the data could necessarily not be uniform, but

great care has been taken to show adequately the average ice conditions, with a bias towards showing more and heavier ice than would occur normally. The bibliography, containing no fewer than 1690 references, is in itself an exceptionally valuable source of information. Though Rear-Admiral George J. Bryan, Hydrographer of the U.S. Navy, modestly considers the atlas to be " a preliminary effort," in conception, execution, and production it tends to show that its publication, under the authority of the Secretary of the Navy, is an outstanding event.

Norsk Misjonsatlas, med Tekstbilag. By S. SOLBERG. 12½×9¼. Pp. 39. 33 maps. Oslo : Norsk Misjonsrad, 1944.

The distribution of Norwegian Missions in south-east Europe, various parts of Africa, in Madagascar, Armenia, Syria, India, China, and South America is clearly shown on the coloured maps issued by the Norsk Misjonsrad, the council co-ordinating the activities of fifteen Norwegian missionary societies and five ancillary organisations. This atlas supersedes the *Atlas over Norske Missioner*, by O. F. Olden, published in 1910. The text includes particulars and statistics concerning missionary activities, and a gazetteer giving Norwegian transphonations of foreign names. In addition to the location of schools, hospitals, and other centres indicated by red symbols, some of the maps also show the location of certain non-Norwegian missions. The scale of the maps ranges between 1 : 500,000 (Santal Parganas, Bihar) and 1 : 45,000,000 (Africa). Both text and maps give an impressive indication of Norwegian zeal in the missionary field.

The Westminster Historical Atlas to the Bible. Edited by GEORGE ERNEST WRIGHT and FLOYD VIVIAN FILSON. Introduction by William Foxwell Albright. 15½×11. Pp. 114. 18 plates (coloured maps). 77 illustrations. London : The Student Christian Movement Press Ltd. First British edition, 1946. 25*s*.

In the Preface to this valuable atlas is stressed the importance of careful study of the historical geography of Biblical lands. Cultural ties with Syria and the Fertile Crescent, proximity to the desert, the incidence of trade routes, lack of geographical homogeneity within the country and the partial isolation of the country as a whole, all had a far-reaching influence upon the history of Palestine and of the countries beyond. An introductory article by Professor Albright, of Johns Hopkins University, on methods of topographical and archaeological research contributing to the rediscovery of the Biblical world, is followed by a chronological outline of ancient history.

The main body of the atlas contains coloured maps which show the geography of Palestine ; the world of the Patriarchs ; other stages in the history of Palestine ; the Assyrian, Persian and Hellenistic empires ; the early expansion of Christianity ; the journeys of Paul ; the history of Jerusalem ; and excavated modern sites in Palestine. Each map or plate of maps is accompanied by an explanatory discussion and by carefully chosen illustrations. The value of the atlas is further increased by an index which serves the triple purpose of giving the location of features shown on the maps, a topographical concordance to the Bible, and the modern place names of ancient sites.

The atlas bears testimony to American scholarship and book production, and the British edition will be gratefully appreciated not only by teachers and ministers, but by laymen who seek a clearer understanding of the Bible.

NEWBIGIN PRIZE : 1948 AWARD

A Bronze Medal and Money Prize will be awarded for the best Essay, suitable for publication in *The Scottish Geographical Magazine* and not exceeding 7000 words in length, on any subject relating to the geography of Scotland.

Essays, in envelopes marked " Newbigin Prize," must be lodged with the Secretary, Royal Scottish Geographical Society, Synod Hall, Castle Terrace, Edinburgh 1, on or before October 31, 1948.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

PROCEEDINGS

MEETINGS OF COUNCIL were held on December 16, 1947, and January 20, 1948, the President presiding.

Obituary.—Sir ROBERT B. GREIG, LL.D., F.R.S.E. The President paid tribute to Sir Robert B. Greig, whose death occurred on the 29th November 1947, who had been a member of the Society from 1912, a Vice-President from 1913 and a Trustee from 1940. He was endowed with a keen intellect, sound judgment and unusual charm of manner ; his services to the Society were given with the same generosity, ease and effectiveness which distinguished his many public activities.

Born on 28th March 1874, in Fife, Sir Robert graduated at Edinburgh University, became a Lecturer in Cheshire Agricultural College in 1897, in Durham College of Science in 1899 and in Aberdeen University in 1903. In 1911 he was appointed Inspector for Agriculture to the Board of Education. During the first world war he served with distinction in the Royal Scots and was awarded the Military Cross.

He was knighted in 1919 and became Chairman of the Board of Agriculture for Scotland in 1921, and in 1928, first Permanent Secretary to the Department of Agriculture for Scotland, retiring from this post in 1934. From his retirement he was identified with many public bodies, being a Director of the L.M.S. Railway, of the Scottish Motor Traction Company, of Messrs. David McBrayne Ltd., as well as being a member of the Carnegie Trust for Scottish Universities and of the University Grants Committee.

Sir Robert presided at the last meeting of the late Council which recommended the recent changes in the Constitution. He undertook, in conjunction with one of the Honorary Secretaries, to advise the Secretary of State for Scotland regarding the name to be given to a proposed new township in Fife. The last service in the name of the Society, like all his work, was faithfully discharged, and was officially acknowledged. It may be recalled that in 1936 he lectured to the Society on " The Effects of Geography on the Agriculture of Scotland."

The Council recorded its deep sense of loss it had sustained by the death of a valued colleague and a great public servant.

WILLIAM O. LEITCH, M.I.C.E., F.R.S.E. The Council wish to record the sense of loss the Society has sustained by the death of one of its Vice-Presidents, Mr. William O. Leitch. Mr. Leitch joined the Society in 1936 when he retired to Edinburgh after long service to the railways of China, and he was elected to the Council in 1938. He was Hon. Treasurer from 1940 to 1945, and during these difficult years of war he conducted the affairs of the Society with great care and devotion ; his exposition of figures was unusually clear. He became a Vice-President in 1946 and held this office until his death.

Livingstone Medal.—The Society's Livingstone Medal was awarded to Captain EJNAR MIKKELSEN in recognition of his great exploration work in Greenland.

Having regard to the fact that this medal cannot, under present circumstances, be struck in gold, it was agreed that it be struck in silver, gilded and accompanied by a money award which combined with the cost of the medal shall at least be equal to the cost of earlier awards of the gold medal, viz. £20 to £25.

In respect of the recent award of this medal to Captain Ejnar Mikkelsen, it was agreed that a sum of £20 be now paid to him from the Livingstone Medal Fund to complete the full award.

Mungo Park Medal.—The Society's Mungo Park Medal was awarded to Mr. F. SPENCER CHAPMAN for his contribution to geographical knowledge in Greenland, Lapland, Tibet and Malaya.

Scottish Universities Medal.—The Scottish Universities Medal will in future also be awarded annually to the best student in geography at either St. Andrews University or University College, Dundee.

THE MAP AS A VISUAL AID

A Memorandum on the use of the map as a visual aid was presented by the Royal Scottish Geographical Society to the Committee on Visual and Aural Aids appointed by the Advisory Council on Education in Scotland.